European Medieval Tactics (2)

The Revival of Infantry 1260–1500

DAVID NICOLLE

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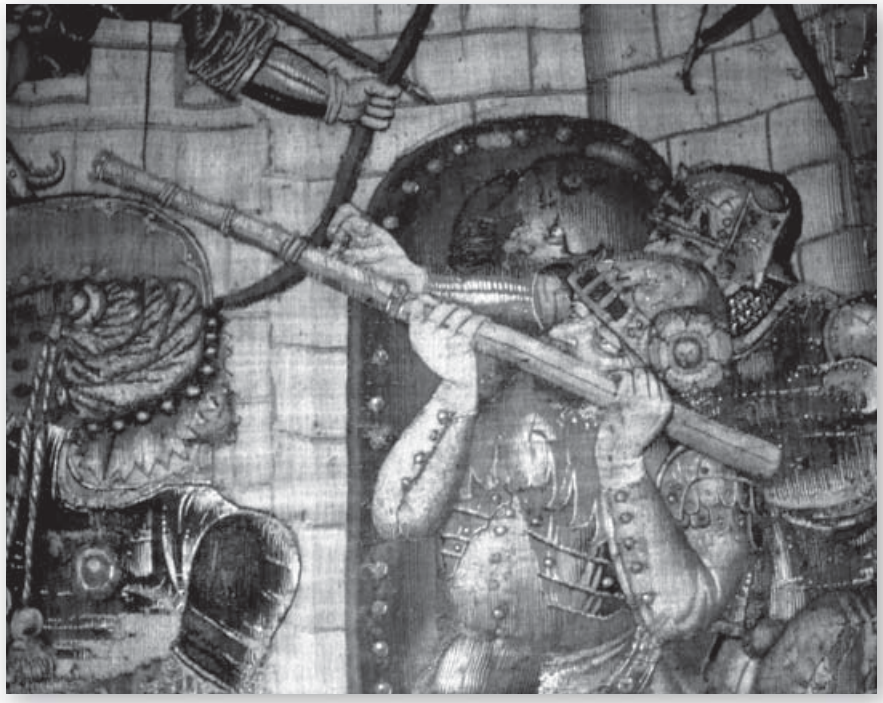
Elite • 189

European Medieval Tactics (2)

New Infantry, New Weapons 1260–1500



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EUROPEAN MEDIEVAL TACTICS (2)
NEW INFANTRY, NEW WEAPONS 1260–1500

INTRODUCTION

Two competing trends characterized late medieval Western European warfare from the late 13th to 15th centuries. Many armies became increasingly dominated by full-time professional soldiers, who were often of the minor nobility or of non-noble origin. However, the term 'mercenary' can be misleading, since such troops were, more often than not, recruited from within the state that employed them. Largely as a result of this process, many Western and Central European armies took on an increasingly 'national' character. During this period there was also a substantial development of what might be called 'national consciousness' – a phenomenon particularly characteristic of France and England, but which also emerged in many other parts of Europe during the 15th century.

Detail of the *Retable of Santa Ursula* by the Master of the Conquest of Mallorca; Spanish, late 13th century. Note the chamfrons and mail protecting the heads, necks and breasts of the horses. (*in situ* Church of Sant Francesc, Mallorca City)

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War was often prosecuted by raiding and ravaging an enemy's territory to destroy his economic base. This illustration of 'Theft of Cattle' is from an early 14th-century German law book. (*Soestner Nequambuch IV*, Stadtarchiv, A.2771, Soest)

Nevertheless, there were significant exceptions to this trend, most obviously in Italy, where the professionalization of military recruitment led to a widespread enlistment of those regarded as 'foreigners'. This term could indicate a soldier from outside Italy (the majority of such men being German, French, English or Spanish); or it could simply mean Italians from a different state within Italy, which was then one of the most politically fragmented regions of Europe. In several other parts of Western and Central Europe non-professional troops recruited on a traditional feudal basis continued to play a vital role; this was still apparent in France, Germany, and Italy, where part-time urban militias retained an important military function. In general, however, later medieval European warfare was normally conducted by a relatively small number of volunteers rather than involving the bulk of the population.

Central and Eastern Europe

If there were partial exceptions to this trend in Western Europe, there were even more in the central and south-eastern regions of the continent. Yet even here some degree of military professionalization could be seen, often focusing on supposedly 'warrior peoples' rather than upon social groups or individual

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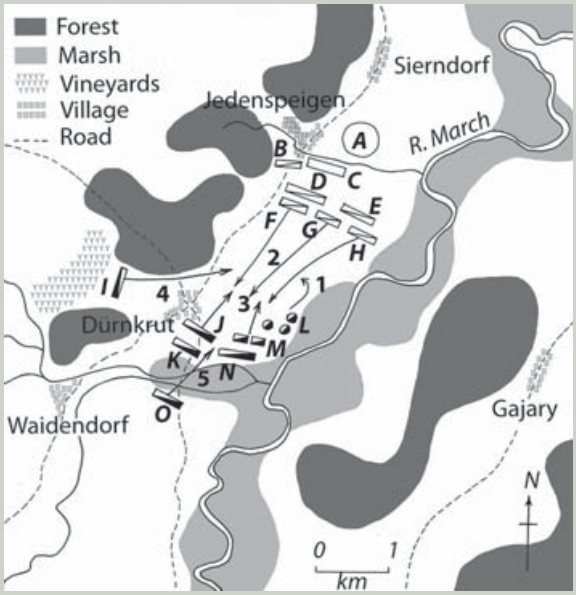
Battle of Marchfeld, 26 August 1278. The armies of Emperor Rudolf and King Ladislas of Hungary joined forces near the village of Dürnkrut and had time to study the battlefield. King Ottokar of Bohemia arrived later; after establishing his camp near the village of Jedenspeigen, he arrayed his forces on level ground between the wooded hills and the marshes bordering the River March. Hungarian 'Cuman' light cavalry horse-archers persistently harassed one flank of Ottokar's army, whereas Ottokar's main forces made repeated cavalry attacks upon Rudolf's main forces. Around midday Rudolf ordered a hidden 'ambush' force to attack Ottokar's right flank, causing the Bohemian army to collapse.

Initial dispositions:
King Ottokar's army
(A) Bohemian camp
(B) Reserve
(C) Militia of Diedics
(D) Poles
(E) Ottokar with Bavarians & Saxons
(F) Bohemians
(G) Moravians
(H) Misnians & Thuringians
Emperor Rudolf's Army:
(I) Ambush force in forest & vineyards
(J) Matthias of Trencin's Hungarians
(K) Count of Schildberg's Hungarians
(L) 'Cuman' Hungarian horse-archers & light cavalry
(M) Austrians
(N) Rudolf with Styrians & Swabians
(O) Reserve probably behind Weidenbach stream

Movements:
(1) Attacks on Ottokar's left flank by horse-archers & light cavalry, continuing throughout battle; **(2)** Repeated frontal attacks by Ottokar's main forces; **(3)** Counter-charges by Rudolf's main forces; **(4)** Attack by Rudolf's flanking 'ambush' force against Ottokar's right flank, causing his army to crumble and flee; **(5)** Reserve probably joins battle to complete the rout.



volunteers as in 13th and 14th-century Western Europe. In fact, these regions show interesting similarities with patterns of warfare and recruitment long characteristic of neighbouring Byzantine and Islamic territories.

By the mid-14th century several states and peoples were involved in the struggle to dominate the Balkans. These wars not only involved professional Hungarian armies, which were similar to those of other parts of Central and

A LITHUANIAN RAIDERS FIGHT NORTHERN CRUSADERS ON THE FROZEN SEA, WINTER 1270

In the deep winter of 1270 a large force of pagan Lithuanian raiders, led by Grand Duke Traidenis, crossed the frozen Gulf of Riga from the northern tip of what is now Latvia to plunder the fertile island of Ösel (now Saaremaa). Bishop Herman Buxhoevden of Leal (now Lihula on the western coast of Estonia) hurriedly assembled his forces, plus those of the Bishop of Tartu, some Danes from northern Estonia, and a small unit of Teutonic Knights, and set out to cut the raiders' escape route. After a vigorous pursuit the Christian force seem to have caught up with the pagans on the ice near a sandy island off the southern tip of Saaremaa.

The Lithuanians **(A)** formed their baggage sledges into a makeshift field fortification; about one-third of them were mounted, and the rest took off their skis to fight **(inset)**. The Christians drew up three divisions, with the elite cavalry of the Teutonic Knights in the centre **(B)**, Bishop Herman on the left **(C)** and the Danes on the right **(D)**; they were followed by a probably less orderly force of their local Livonian auxiliaries **(E)**.

As the Crusaders charged, the Teutonic Knights drew slightly ahead, and as a result Traidenis' experienced winter warriors cut down many of their horses before the Christian flank forces reached the Lithuanian line. The Danes and the bishops' men then broke through the pagans' defences and pursued some fugitives across the ice. However, behind them other Lithuanians rallied, almost surrounding the remaining knights and their local Livonian auxiliaries. Even after Bishop Herman and the Danes returned from their pursuit, the struggle continued, Master Otto and 52 Brethren of the Teutonic Order being slain. Finally, as night fell, the wounded Bishop Herman ordered a withdrawal. Although the Lithuanians reportedly suffered the greater losses, in the end they were still in control of the battlefield on the blood-stained ice, and kept the booty from their raid. They had thus demonstrated the ability of more lightly equipped but flexible troops, with improvised field fortifications, to withstand and outfight knightly cavalry.

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of Western Europe, but also local Slav and Romanian forces, plus Turco-Mongol nomadic groups from the steppes. During the second half of the 14th century settled and Muslim Ottoman Turks would be added to this volatile mixture, and would indeed emerge triumphant a hundred years later. The Albanians were another of those so-called 'warrior peoples', and they played a leading role in Venetian forces in the Balkans, Greece, and eventually within Italy itself. Here it is important to note that the mass migration of Albanians into Greece which began early in the 14th century was almost a throwback to the 'folk migrations' of the early medieval period.

In contrast, significant changes seen in north-eastern Europe during the later medieval period were rarely the result of population movements, for here new national identities were emerging. The original Prussians, who spoke a language akin to Lithuanian, were assimilated and disappeared as a separate group, whereas the neighbouring Lithuanians were eventually converted from paganism, some to Catholic and some to Orthodox Christianity. They were thus drawn into the broader civilizations of later medieval Europe.

By that time, of course, the overwhelming majority of the inhabitants of Europe had been Christian or Muslim for many centuries. The only significant exceptions were found in the far north of Finland, Norway and Sweden, plus some isolated valleys on the northern slopes of the Caucasus Mountains. The fearsome Lithuanians had maintained their separate cultural identity since ancient times, as had the Finns and Estonians further north. Now, however, a new people – the Latvians – emerged from the disparate and mostly Balt-speaking tribes of a territory between the Lithuanians and Estonians, largely as a result of social and cultural pressure arising from German and Scandinavian Crusader conquest.

Regional influences on tactical developments

The later 14th and 15th centuries witnessed an increasing imbalance in the competing manpower resources of Christian and Muslim civilizations.

Detail of the effigy of Louis de France, died 1319; note laced defences on forearms under loose mail sleeves. (*in situ* Basilica of St Denis, Paris; author's photograph)

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LEFT
Coat-of-plates from Kussnach; German or Swiss, *c.*1340–60. (Swiss National Museum, Gessler No. 1, Zurich)

RIGHT
The back of a wooden carving of a knight; north German *c.*1360–70. Note the detail of the coat-of-plates, and iron splint defences on the upper and lower arms. ('Levitic Pew', *in situ* Cathedral, Verden)

Whereas European Christendom was relatively densely populated in relation to its capacity to feed itself, many Muslim regions were under-populated. This led to different forms of military structure and tactics when one side conquered a region populated by the other. In the Iberian peninsula, for example, Christian Spain and Portugal crushed the Muslim Andalusians and eventually caused the disappearance of Islam in this region. In contrast, the Ottoman Turks would hold their vast Balkan conquests with small garrisons, while Muslims only became majorities in a few areas.

At the same time, in most parts of Europe the later Middle Ages would witness the development of more sophisticated battlefield tactics than had been seen for many centuries. Nevertheless, broader strategy remained essentially the same as it had been since the collapse of the Western half of the Roman Empire. This largely unchanging broader strategy remained more important for the winning of wars than were large-scale clashes on the battlefield, where greater innovation could often be seen. Similarly, differences between more advanced countries at the heart of European civilization and those on the fringes of medieval Christendom generally increased in military and especially tactical terms, just as they did in economic and social fields.

Naturally, the climate of a particular area affected its traditional campaigning season. In 13th and 14th-century Italy, for example, this season was normally from March to October, whereas it tended to be shorter further north. In contrast, some northern regions had their own very distinctive traditions of winter warfare that were not seen in the south. In almost all cases the primary offensive strategy remained raiding and the inflicting of as much devastation upon the enemy's economic base as possible, while avoiding major confrontations with his main forces. Defenders, meanwhile, still focused upon

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harassing, ambushing and otherwise forcing such raiders to withdraw. Siege warfare now seems to have declined in relative significance, though it was still by far the most important means of conquering territory.

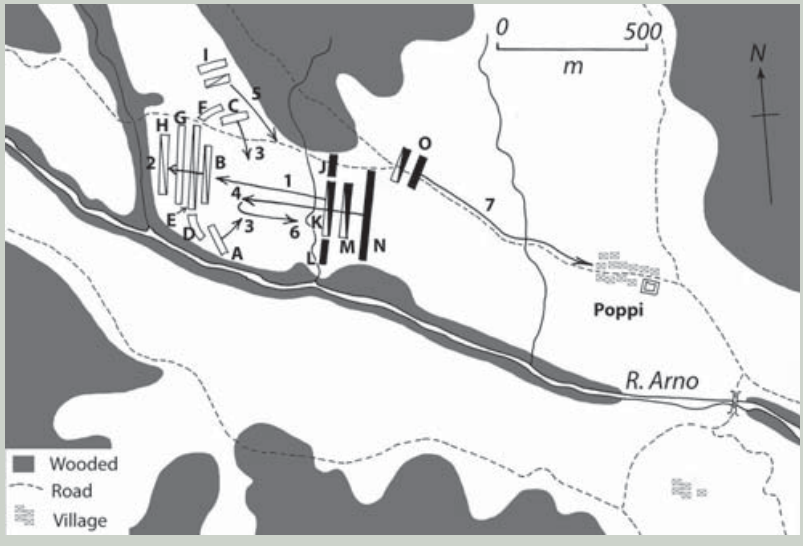
Meanwhile, three new or more clearly differentiated types of troops characterized western European warfare during the 14th and to some extent the 15th century. Alongside the improvement in infantry organization and effectiveness, there was now a clear distinction between ever more heavily armoured men-at-arms – especially when operating on horseback – and various types of light cavalry, who were no longer merely poorly equipped horsemen but were now allocated specific military roles.

THE 13TH–14TH CENTURY INFANTRY REVIVAL

By the end of the 13th century the continuing growth of a money economy in Western Europe had led to radical changes in military recruitment. Rulers and feudal barons had long trusted professional soldiers more than their own feudal troops, and now the wealth of many states led to such men being enlisted in increasing numbers. The majority still found employment within their own countries, though there was also some foreign recruitment. Nevertheless, the dividing line between feudal and paid soldiers remained blurred. For example, it became normal for urban militias to receive wages once they had completed their defined period of feudal service, and, since many campaigns lasted longer than this, the need for money to pay troops came to dominate government priorities.

Battle of Campaldino, 11 June 1289. The army of Florence and its Guelph (pro-Papal) allies, commanded by Guillaume de Durfort and Aimeric de Narbonne, confronted the considerably smaller army of Arezzo and its Ghibelline (pro-Imperial) allies on the plain of Campaldino. Nevertheless, the Aretine commander Guglielmino degli Ubertini attacked with his best cavalry and infantry. This joint assault was successful until infantry on the Florentine wings enveloped the attackers. The main force of Aretine infantry advanced in support, but was struck in both flanks. The Florentine reserve under Corso Donati then charged, routing the Aretine main force.

Initial dispositions:
Florentine & Guelph Army
(A) Right wing *pavesari,* crossbowmen, archers, & infantry with long spears
(B) Florentine *feditori* cavalry
(C) Left wing infantry
(D) Infantry
(E) Cavalry main body
(F) Infantry
(G) Baggage train & infantry
(H) Rearguard cavalry
(I) Reserve
Aretine & Ghibelline Army
(J) Archers & crossbowmen
(K) Arezzo *feditori* cavalry
(L) Archers & crossbowmen
(M) Cavalry main body
(N) Infantry
(O) Reserve



Movements:
(1) Attack by Aretine cavalry and infantry; **(2)** Florentine cavalry centre forced back; **(3)** Florentine wings envelop attackers; **(4)** Main Aretine infantry force advances to prevent front rank being surrounded; **(5)** Florentine reserve threaten Aretine right flank; **(6)** Aretine infantry withdraw, leaving most of front line to be surrounded; **(7)** Aretine reserve retreats to Poppi.

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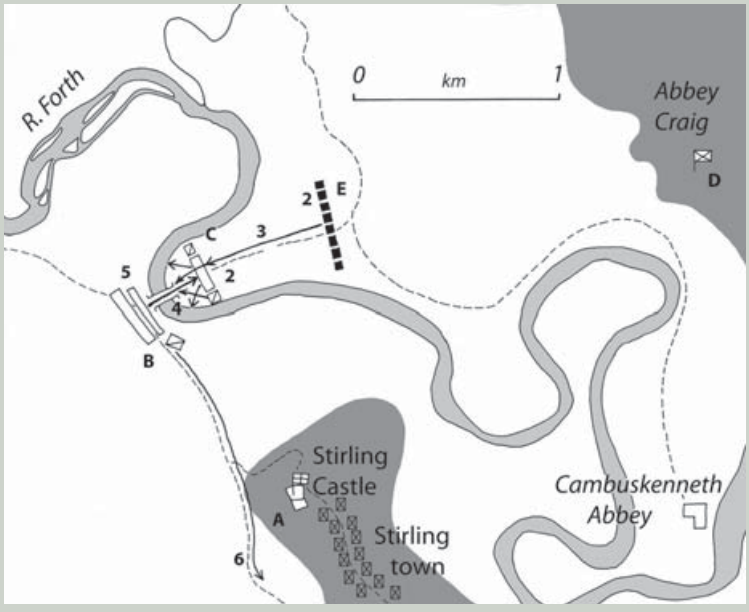
Battle of Stirling Bridge, 11 September 1297. The English commanders decided on a frontal assault across a narrow wooden bridge, but while doing so the Earl of Surrey twice attempted to negotiate with the Scots leaders William Wallace and Andrew de Moray. On the third occasion that the English started to cross the Forth, Wallace arrayed his army between the hills and the river. As soon as the English vanguard had crossed, the Scots attacked and seized control of the bridgehead. Isolated from their main body, the English vanguard were slaughtered, though some cavalry under Marmaduke de Thweng cut their way across the bridge. After this unexpected defeat Surrey retreated south, leaving the garrison in Stirling Castle isolated.

Initial dispositions:
English army
(A) Earl of Surrey observes battle from Stirling Castle
(B) English main body
(C) English vanguard under Sir Hugh Cressingham, including cavalry under Marmaduke de Thweng, crossbowmen from the Stirling garrison & Welsh auxiliaries
Scots army
(D) William Wallace & Andrew de Moray on Abbey Craig hill
(E) Scots army in *schiltron* formations

Movements:
(1) English start to cross bridge at dawn, but are recalled. Parley with Scots commanders fails; English start to cross a second time, but again recalled; second parley fails, so Surrey orders English vanguard across and forms up. **(2)** Scots form line of *schiltrons*; **(3)** Scots attack English vanguard, some seizing control of bridge, vanguard largely destroyed; **(4)** De Thweng's retinue cut through the Scots and cross back over bridge; **(5)** Bulk of English army unable to cross bridge; **(6)** After ordering bridge destroyed, Surrey retreats.



Many late 13th and 14th-century Italian and Flemish cities or city-states could also raise larger numbers of troops than they required, so these surplus men became available for hire. On the other hand, in areas such as Brabant there was a decline in the reputation of local spear-armed infantry, who had been in great demand during the 12th and earlier 13th centuries. This almost certainly reflected changing tactics and forms of organization, as well as more localized factors. Meanwhile other groups, including javelin-armed Navarrese and Basque light infantry from northern Spain, continued to find foreign employers well into the 14th century. Crossbowmen – especially those from northern Italy – were in increasing demand almost everywhere except England. Other less regarded, and thus less well paid mercenaries tended to be drawn from poor regions of Europe such as Ireland, Scotland, Switzerland (in this early period), and some parts of the Iberian peninsula.

At one end of the military payscale were skilled engineers and other technical specialists; these remained in high demand and short supply, and some of them achieved the status of knighthood. At the other end of the spectrum were another group of specialists – those professional fighting men who hired themselves out as champions in legal 'trials-by-combat'. Offering their services to the highest bidder, and probably mostly drawn from among disgraced soldiers, these were widely regarded as the male equivalent of prostitutes.

Italian armies and tactics

No country developed a more distinctive form of military recruitment in the late 13th and 14th centuries than Italy. This would evolve into the widely misunderstood *condottieri* system. During the late 13th century communal militias played a perhaps still dominant role in Italian warfare. However, the

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Flemish infantry at the battle of Courtrai, from an early 14th-century carved wooden chest. Note the long braced spears at the front of the array. (*Courtrai Chest*, New College, Oxford; author's photograph)

recruitment of many militias continued to reflect archaic and by now largely irrelevant social divisions between cavalry *milites* and infantry *pedites*. Much of Italy's urban cavalry was still being drawn from a war-orientated *feditori* class from the old feudal elite, plus newly wealthy merchant families. Those of genuine knightly or aristocratic status tended to assume leadership roles, and were also supposed to fight for their city without pay, in return for the tax exemptions that they normally enjoyed because of their social status. Meanwhile, many of the senior *feditori* were accompanied by their own *masnadieri* paid retainers. A city's infantry force was drawn from the ranks of the *popoli* – ordinary citizens who owed military service between the ages of 15 and 70 years. Better-armed *pavesari* 'shield-men' traditionally fought in the front rank and were recruited from more prosperous skilled craftsmen. Larger, but less well-equipped forces of Italian light infantry, pioneers or merely labourers were drawn from a city's *contado* – that part of the surrounding countryside dominated by the city.

In Italy titles such as knight and baron were becoming largely honorific, at least in the northern and central parts of the country. Even the old city armies, traditionally consisting of three distinct elements – the urban militias, auxiliaries from neighbouring or allied areas, and mercenaries – were now changing. The *societas peditum* or 'associations of infantrymen' in cities like Florence were already evolving into *societas populi* or 'associations of the

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people', whose political power grew as German imperial control over Italy collapsed. In Florence, for example, a 'popular' regime took control as early as the mid-13th century, being supported by the militias of the six *sesti* or quarters. Furthermore, this regime soon abolished the older aristocratic *societas militum* or 'societies of knights', and even decreed limits on the permitted height of the private *torri* urban towers of major aristocratic families.

In practice, political power fluctuated in such Italian cities, with different noble or 'popular' groups winning power at different times. During the late 13th century another *popolo* government in Florence radically reorganized the city's militia, dividing it into twenty *gonfali* companies based upon specific parts of the city, each with its own banner and led by the *capitano del populo*. The members of these *gonfali* had to keep weapons with them in times of trouble, while heavy fines were imposed on anyone hindering a militiaman in the performance of his duty. Members of the *gonfali* were themselves forbidden from helping a member of the aristocracy, while being bound by oaths of loyalty to one another.

Troops drawn from the surrounding *contado* were similarly grouped into *pieve* detachments, each from a collection of villages. These were either subdivided into, or were referred to as, *vessilli,* each with a *vexilla* banner carried by a veteran soldier. Infantry often outnumbered cavalry by ten to one in these Italian city armies, the cavalry remaining an elite organized in squadrons. The best foot soldiers were similarly grouped into squadrons of *pavesari* shield-bearers and crossbowmen, each again with its own banner, held by *gonfalonieri* for the crossbowmen or *bandifer* for other infantry. In addition there were two officers known as *distringitori* or 'explainers', and a senior *consigliere* or 'consul'. At the heart of a communal army stood its *carroccio*, a symbolic wagon with banners and a *martinello* bell which may have had a communication function or may simply have been rung to maintain morale.

The most detailed available information about infantry tactics in the late 13th and early 14th centuries also comes from Italy, which probably still had the most disciplined infantry forces in western Europe. Their normal tactics consisted of spear-armed foot soldiers being drawn up behind men carrying large mantlet-like *pavese* shields. Behind the spearmen were large numbers of crossbowmen. Such troops generally seem to have adopted a curved formation which, like so many other aspects of Italian warfare, might have resulted from eastern Mediterranean, Byzantine or Islamic influence. An array like this tended to force an enemy cavalry charge into a narrower front where the horses could be shot down by crossbowmen. Even so, final victory still relied upon a counter-charge by supporting cavalry, and here the Italians again seem to have been ahead of their northern neighbours through their well-recorded and perhaps more frequent use of tactical reserves – a habit again perhaps learned from the east.

Effigial slab of Brochard de Charpignie, from a church in Larnaca, Cyprus; end of 13th century. (Musée Nationale du Moyen Age, inv. cl. 18842, Paris)

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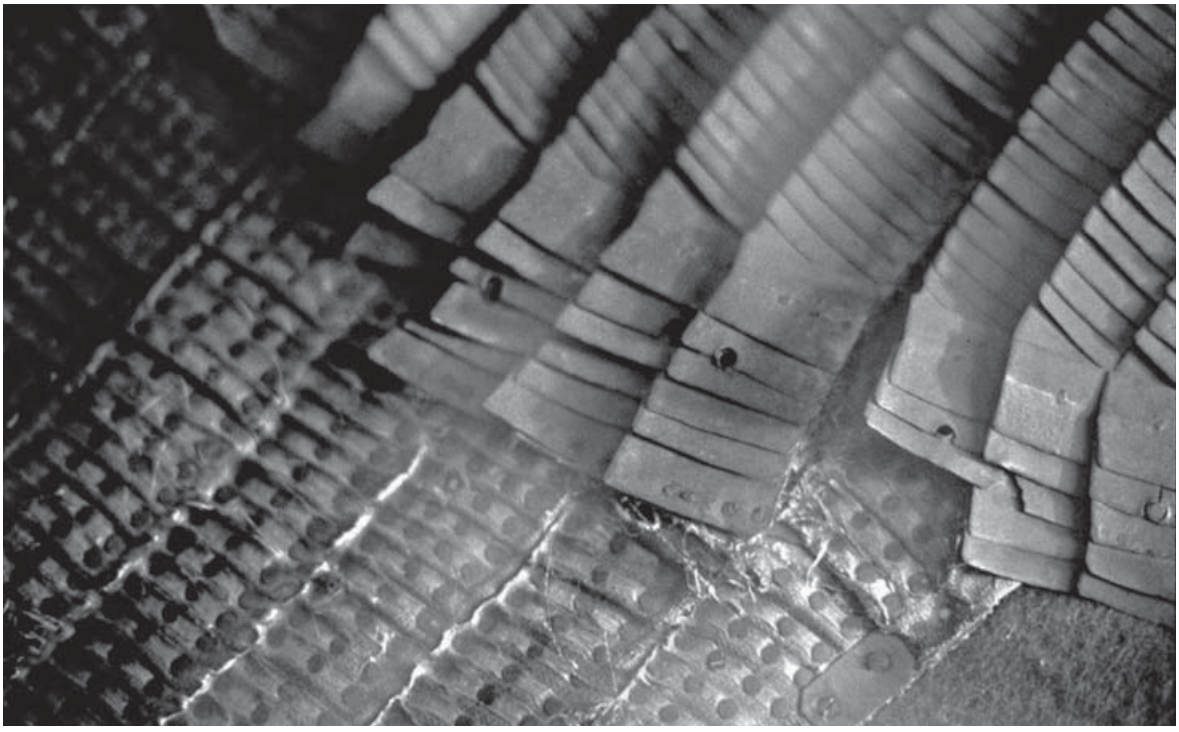

Interior and exterior of a late 14th or early 15th-century brigandine armour. (Castle Museum, Warwick; author's photograph)

Venice was in many respects unlike other Italian city states, yet the Venetian army was just as effective as its fleet (despite jibes that the marsh-dwelling Venetians could not ride properly). Whereas the armies of many 13th-century Italian states already included mercenaries, most Venetian troops continued to be recruited from the city and the surrounding lagoon area, plus some feudal contingents from Dalmatian and Istrian territories under Venetian rule. In emergencies Venetian parishes registered all males

B

BATTLE OF FALKIRK, 22 JULY 1298

This battle was a famous example of the ability of massed infantry spearmen to withstand heavy armoured cavalry, but not massed archers.

Following an English defeat at Stirling Bridge in 1297, King Edward I returned from France determined to lead an army against the Scots. This, however, included large numbers of unenthusiastic Welshmen, and halted near Edinburgh. Believing that the English would retreat, William Wallace assembled the Scottish army near Falkirk, close enough for Edward to launch a sudden attack.

The Scots had few cavalry and archers; the bulk of their troops were spear-armed infantry, who assembled into four large but static formations known as *schiltrons* **(A**, **A**, **A)**. Between these stood the Scottish archers **(B)**, while Wallace and his cavalry **(C)** were between the spearmen's right flank and Callendar Wood. The English cavalry formed four battles; that of the Earl of Surrey was on the left **(D)**. That of the Earls of Lincoln and Hereford and the Earl Marshal of England was originally the next to the right, with those of the Bishop of Durham and King Edward himself on the right flank. These mounted formations attacked the Scots, though Lincoln, Hereford and the Earl Marshal **(E)** were forced to their left by a marshy stretch of the Glen Burn. On the right, Durham's battle reached the Scottish flank ahead of King Edward's battle. Meanwhile the delayed English infantry were also forming up some way behind.

Wallace's cavalry were driven back, most of them soon fleeing through the wood **(F)**. The English cavalry then scattered the Scottish archers, but were unable to break the *schiltrons*. However, the English archers soon arrived, and shot down the static formations of Scottish spearmen. After suffering appalling losses the *schiltrons* collapsed, and their survivors fled towards Callendar Wood.

Inset 1: English knight attacking one of the fleeing Scottish archers.

Inset 2: The defensive system of a *schiltron*. Those at Falkirk may have been of any strength between *c.*750 and *c.* 2,000 men, in about six roughly concentric circles. The size of the open space in the centre would naturally vary a great deal, depending upon the number of men in any one formation.

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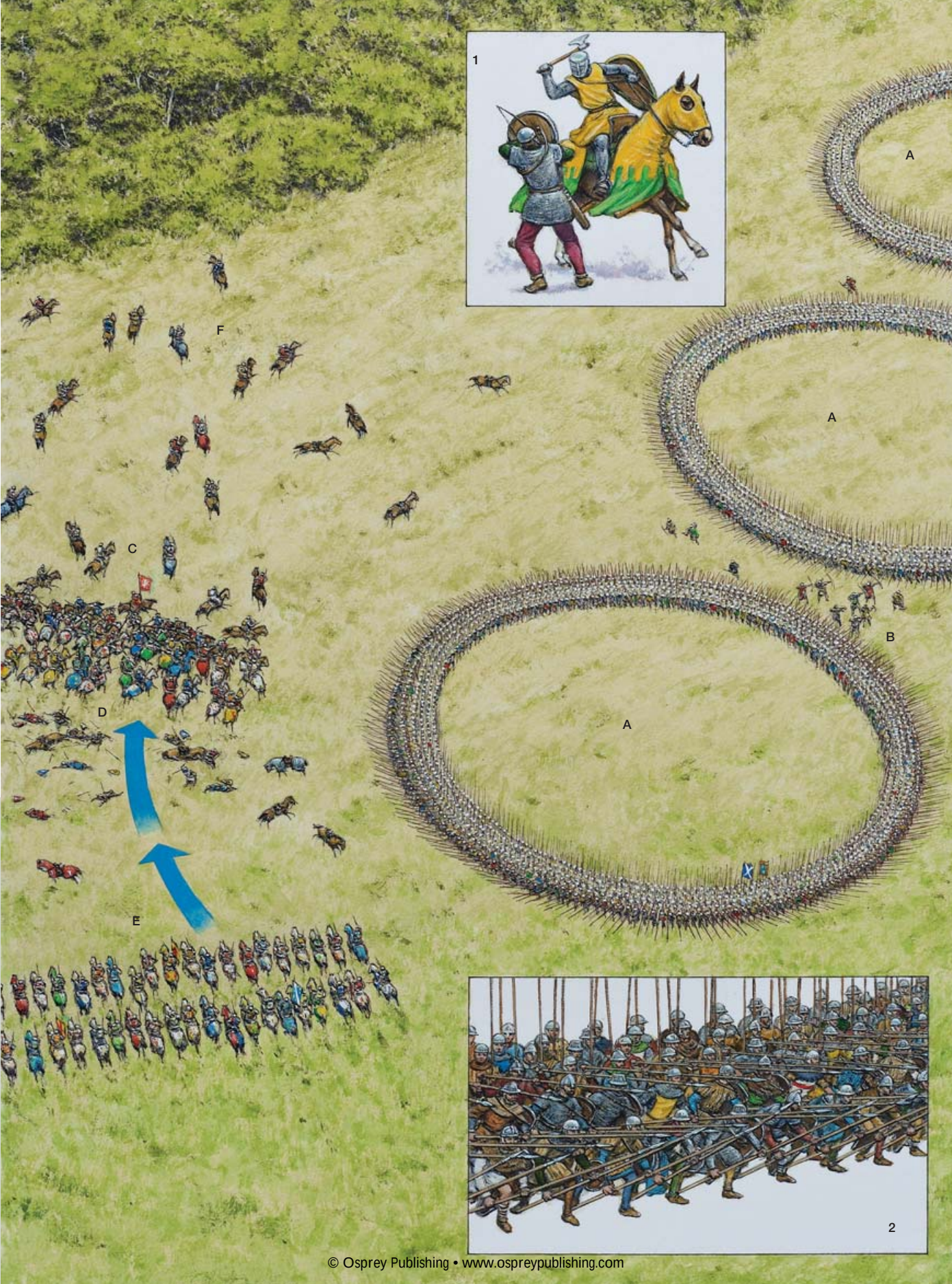

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ABOVE
Effigy of a southern Italian knight in hardened leather armour. (*in situ* Cathedral, Salerno; author's photograph)

BELOW
Breastplate with rivet-heads to secure a decorative outer layer of cloth. (Armenian Monastery of San Lazzaro, Venice; Marco Morin photograph)

aged between 17 and 60, listing all the weapons they possessed; those called upon to fight were then organized into groups of a dozen.

Despite the distinctive character of so many aspects of Venetian warfare, Venetian tactics on land were essentially the same as those of other Italian armies. In the 13th century, as in the 12th, Venetian militia infantry fought in close-packed ranks with large shields. They normally used their spears as pikes, supported by an increasing number of disciplined crossbowmen protected by large pavese-style shields. Here, as elsewhere, high standards of discipline and genuine co-operation between horse and foot set most of these Italian forces apart from those of the rest of Europe.

The British Isles

Foreign mercenaries played a lesser role in England than in many other parts of Europe, though they did feature in specialist roles and in senior command positions. During the late 13th century, for example, the Royal Household included soldiers from Scotland (which was theoretically under English suzerainty), Gascony (which was under the English crown), as well as Picardy, Flanders and Burgundy. Men from Savoy – which straddled the frontiers of what are now south-eastern France, western Switzerland and north-eastern Italy – also found a respected place in English service.

The old *fyrd* local levy of England was less sophisticated than the urban militias of Italy – indeed, it seems to have been more rarely summoned and less effective than its counterparts in most other parts of western Europe. Perhaps this was because England had been so rarely invaded since 1066, causing the habit of local military service to fade. Nevertheless, the legal obligation to serve remained on the statute books. Each individual's role as an axe- or spear-armed foot soldier, or as an archer, was assessed according to his wealth and the location where he lived. Men from northern England who were summoned against the Scots tended to include archers, crossbowmen, or infantry armed with a spear or gisarme long-hafted

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axe, but by the mid-13th century it was men of Sussex and Kent who were the most noted archers.

More archers came from forested regions than elsewhere, despite the fact that in such areas the possession of a simple bow – misleadingly now called a longbow – often raised suspicion that its owner was poaching the king's deer. In fact, some 14th-century military regulations specifically stipulated that bows should be the weapons of those who live 'outside the forest', while crossbows were considered more suitable for those 'inside the forest'. The 14th century was, of course, the great age of the English archer, and such troops almost became a professional elite, with the best being recruited into the military households of the great nobility.

At the same time the problem of recruiting sufficient numbers of good infantry remained serious, even for campaigns within the British Isles against the Scots. As a result men of dubious reputation were enlisted from among suspected or convicted criminals who had sought sanctuary in various northern 'royal liberties'. During the 14th century England's Royal Commission of Array replaced the ineffective *fyrd* levies, though an individual's duties and the equipment expected were still based upon wealth and social status. Under the new system, authorized commissioners, either from the Royal Household or designated by army commanders, toured the shires and parishes of England to select a specified number of suitable men, though those chosen were usually summoned for local defence rather than overseas campaigns.

In contrast, the cities of England and Wales continued to provide the king with whatever number of soldiers their charters specified. Other more or less voluntary troops included pardoned criminals, and better-paid specialists such as miners from the Forest of Dean, which was then one of the most important mining areas in the country. Mounted archers were already a professional elite, largely drawn from southern England, while by the 1330s the bulk of ordinary bowmen seem to have been recruited from the northern counties.

Effigy of a German knight, *c.*1358. (*in situ* parish church, Kirchzarten; author's photograph)

As yet the Welsh largely remained spearmen rather than archers. Irish troops consisted of assorted infantry – though not bowmen – plus light cavalry 'hobelars'. The latter would become an increasingly important form of light cavalry whose tactics were clearly based upon long-standing Celtic military traditions. Compared to England and France, the armies of the Celtic states remained old-fashioned and sometimes primitive, though nevertheless effective.

Following the English conquest of Wales in the late 13th century the traditional Welsh warrior class gradually disappeared, to be replaced by a local gentry comparable to that of England. In contrast, the rural levies of Scotland faced the professional troops of invading English armies with greater success. Yet these Scottish armies remained remarkably varied in composition: they included knights of Norman descent from the central Lowlands,

(continued on page 20)

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Decorated initial, early 14th century, showing Scots attacking Carlisle. Note large battleaxe at top right, and miner with pick at bottom left. (*City Charter of 1316 AD*, Cumbria Record Office, inv. CA1-2, Carlisle)

C BATTLE OF KEPHISTOS, 1311

This action was a defensive victory, on carefully chosen ground, by relatively lightly equipped infantry and smaller numbers of light cavalry, over knightly cavalry and heavy infantry.

Early in the 14th century, the Catalan Grand Company was an often almost leaderless association of mercenaries, mostly infantry but with some light cavalry, strengthened by Turks and Greeks. They had defeated a variety of opponents around the Aegean Sea, but at Kephisos they faced the much larger though less experienced army of the Crusader Duke of Athens, Gautier I of Brienne (who had employed the Catalans in the recent past). The latter, accompanied by their families, were able to select a defensible position near Thebes, consisting of 'level land green with grass', probably on top of a hill **(upper half of plate)**; this was protected by an extensive marsh **(lower half)**. The Catalans almost certainly drew up their infantry in the centre, with their far less numerous cavalry on the flanks. Approaching from the south, Duke Gautier had to cross the marsh to reach the Catalans, or make a long detour to attack their position from the north. Apparently confident in the size of his army, the Duke may also have known that the Catalans' Turkish Muslim associates **(A1)** were refusing to fight, fearing a joint Christian plot to destroy them.

The Athenians' knightly cavalry **(B)** formed up in line, followed by infantry **(C, C)** commanded by Duke Gautier himself. An initial Athenian cavalry charge failed, seemingly defeated by Catalan *almugavars* – troops lightly equipped in Andalusian fashion **(D)**. Athenian infantry now attacked in support of their cavalry; but the Turks, no longer fearing a plot, decided to aid their colleagues, presumably joining in a flanking Catalan cavalry attack **(A2 ?)**. Severe fighting ended in an overwhelming Catalan victory; Gautier de Brienne lay dead on the field, and the Grand Company soon found itself ruling most of Crusader Greece.

Inset: Catalan *almugavar* light infantrymen fighting knights from the Crusader states of Greece in the marshland. Some sources suggest the Catalans had made the marsh even muddier by diverting river water so that the Athenian cavalry horses 'moved only with difficulty'.

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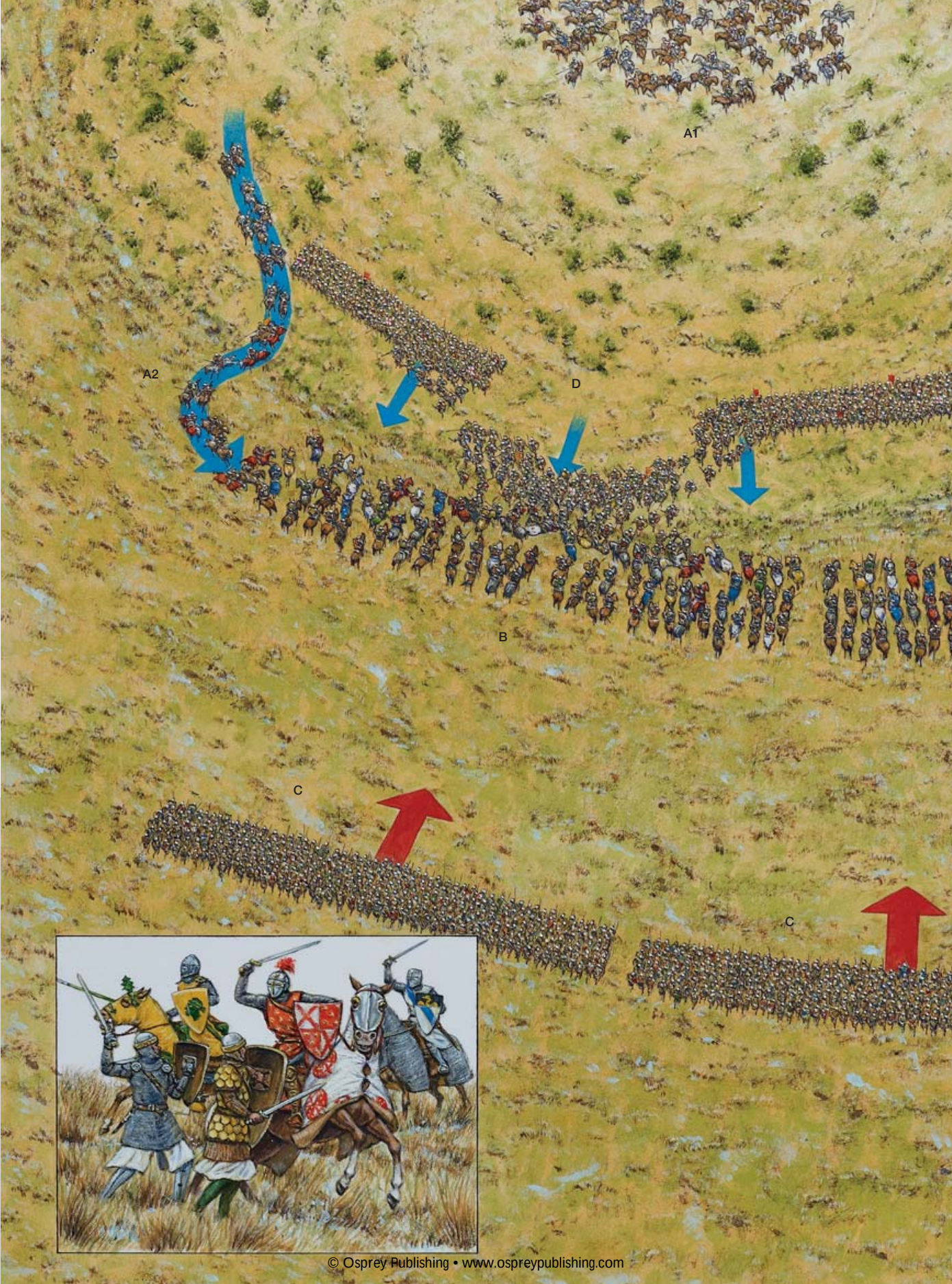

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Bascinet helmet with attached mail aventail; German, 14th century. These aventails were worn over a thickly padded undergarment like a hood that caped out over the shoulders. (Deutsches Historisches Museum, Berlin; author's photograph)

occasional Flemish mercenaries, Anglo-Saxon 'Northumbrians' from the Lothian regions, 'Picts' from Galloway, Cumbrians from the western part of the Anglo-Scottish border, Highlanders from the islands, and men regarded as 'Danes' from the northern and western islands. Many Highlanders were, in fact, the tribal followers of regional earls or clan leaders. Changes were slower and more limited in Ireland, where many local Anglo-Irish lords continued to recruit forces that still reflected traditional Celtic military systems. From the late 13th century these could include mercenaries such as Galloglas axe-armed infantry from western Scotland.

The Empire and Scandinavia

In the German provinces of the Empire – or Holy Roman Empire, as it later came to be known – an old-fashioned feudal system of military organization continued to exist in several regions well into the 14th century. This was particularly true of the east, whereas the western parts of the Empire gradually adopted structures similar to those seen in neighbouring France.

Scandinavia, though old-fashioned, saw the development of military systems similar to those in northern Germany. This was particularly the case in the royal armies of Denmark and Sweden. On the other hand, rural militias continued to play an important role – notably on the Swedish island of Gotland, which remained largely autonomous. Urban militias also developed in certain Baltic mercantile cities, a classic example being the prosperous but militarily old-fashioned city of Wisby on Gotland.

France

Although there was still no permanent French army even in the late 13th century, there was a permanent command structure whose capabilities and limitations had a profound influence upon French tactics in the field. At its head were close relatives of the king who commanded national and provincial armies. A professional Constable and two Marshals drawn from the military aristocracy were a permanent feature, as was a Master of Crossbowmen, who was often of humbler origins. In fact, there appear to have been separate chains of command for cavalry and infantry forces; it was, of course, possible to muster cavalry much more quickly than foot soldiers. Other senior men, permanently 'on call' if not permanently 'on duty', included royal seneschals who served as provincial military governors and army commanders.

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THE CHALLENGE OF BOW & CROSSBOW

The 14th to mid-15th centuries

Italy was probably the most militarily innovative country in Western Europe during this period. The urban militias that had dominated warfare to a degree not seen anywhere else in Western Europe declined in favour of *condottieri* or mercenary 'companies', especially during the 14th century. At the same time the cities came to dominate most of northern and central Italy politically and economically, this being particularly true of cities whose increasing wealth enabled them to recruit the largest numbers of *condottieri*.

Yet Venice remained a notable exception to this trend, being a truly independent state whose military structures, strategy and tactics developed along different lines from those seen in the rest of the peninsula. For example, the Venetian militia remained a highly effective force on land and at sea. Each resident was entered in the register of his *sestieri* or quarter, though his duties could range from turning out for major campaigns to assisting the *signori di notti* night patrols that maintained law and order.

Venetian troops were also enlisted from the surrounding lagoon area and from Venice's steadily expanding mainland territory. Although mercenaries were recruited, Venice preferred to rely upon its own people, either as volunteers or as conscripts. In fact a register dated 1338 estimated that 30,000 Venetians could bear arms; many were listed as skilled crossbowmen, while others fought with slings and fire-grenades. Meanwhile Venice also had its own local corps of professional infantry to garrison vital castles like Mestre and Treviso.

France

Elsewhere in 14th century Europe changes in military recruitment and in associated weaponry led to significant developments in tactics and military organization, and these applied particularly to infantry forces. This was

North Italian wall painting, mid-14th century, showing an archetypal infantry array as a sequence of individual soldiers. Note the shield-bearer at far right, protecting the reloading crossbowmen. (*in situ* Castle of Sabionara, Avio; author's photograph)

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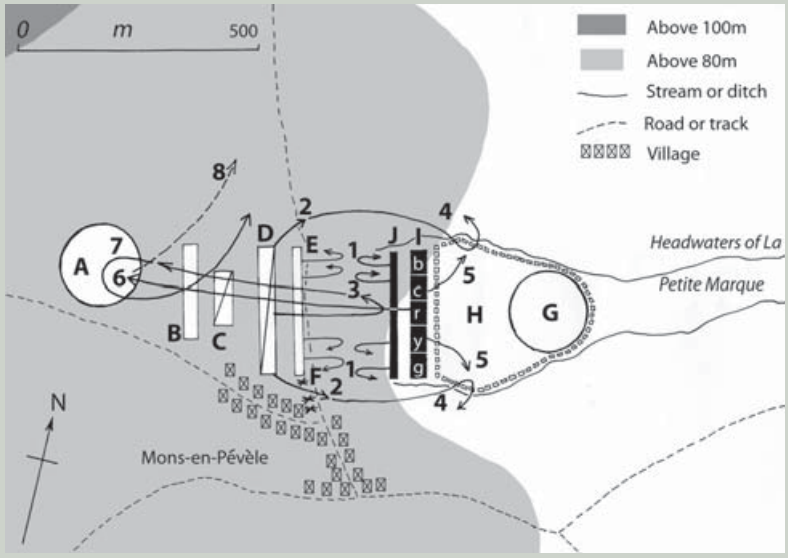
broadly reflected in the relatively new indenture system seen in France and England, under which individuals or ready-formed military units were contracted to serve for an agreed period in an agreed area, and with generally improved discipline. Those hired were largely professionals, usually with recognized and valued skills.

At the same time, the Hundred Years' War between France and England increased the importance of French urban forces, both royal garrisons and local militias. This was obvious in the war-torn south of the country, where two forms of garrison were recorded: the *establida* responsible for defending an entire region, and the *garniso* that defended the town where it was stationed. In wartime, local urban militias were placed under the command of captains selected by the crown in northern France, or by local barons in the south. Such captains were normally outsiders, free from local interests. Otherwise the militias were commanded by the town consul or by a captain selected from amongst the prominent citizens. During the second half of the 14th century many such militias were further strengthened with professional sergeants.

If danger threatened, the whole militia would be mobilized, usually in companies of 50 men and squads of 10, with a pre-agreed command structure. Ordinary foot soldiers manned the town ramparts while archers were positioned at the lower embrasures. If necessary a militiaman's entire family could join him at his post. Wealthier citizens who possessed horses might remain in the streets, ready to reinforce a vulnerable stretch of wall or launch a sortie against attackers. Where effective rural militias still existed,

Battle of Mons-en-Pévèle, 13–18 August 1304. The French under King Philip IV made camp on raised ground, after which the Flemish army made camp in an area protected by 'ditches or marshes'. While the Flemish constructed a field fortification of wagons, the French erected a few small 'engines' normally used in siege warfare. On 13 August, Flemish crossbowmen tried to provoke the French into a premature cavalry assault, but failed. Peace negotiations from 14 to 17 August also failed, and ceased when Philip redeployed his flanks. On 18 August the French cavalry launched a full-scale attack, but were repulsed, so Philip sent cavalry around one or both the enemy's flanks. This broke into the Flemish camp but was then expelled. After John and Henry of Namur and others withdrew to Lille, William of Jülich, Robert of Namur and Philip of Chieti decided on a major infantry assault, which caught the weary French by surprise. As the Flemish dispersed to pillage, Philip led a counter-attack which forced them to flee.



Initial dispositions:
French army
(A) Camp
(B) Infantry
(C) Reserve
(D) Cavalry
(E) Crossbowmen
(F) 'Field artillery'
Flemish army
(G) Camp
(H) 'Wagon fort'
(I) Militias from (top to bottom) Brugge, Courtrai, Rijsel, Ypres & Ghent
(J) Crossbowmen

Movements:
13 Aug **(1)** Flemish crossbowmen fail to provoke French attack; the two sides skirmish; French 'engines' bombard the enemy, but Flemings destroy them.
18 Aug **(2)** Philip IV rearranges his flanks; Flemings interpret this as attempt to outflank them. **(3)** French cavalry frontal assault is repulsed; **(4)** French cavalry flanking attacks break into Flemish 'wagon fort'; **(5)** Flemish reinforcements expel French. **(6)** Some Flemish contingents withdraw; the French think the fighting is over, but remaining Flemish contingents launch sudden attack; **(7)** King Philip, endangered, regroups his cavalry & infantry; French counterattacks rout disorganized Flemish looters. **(8)** Flemish army flees.

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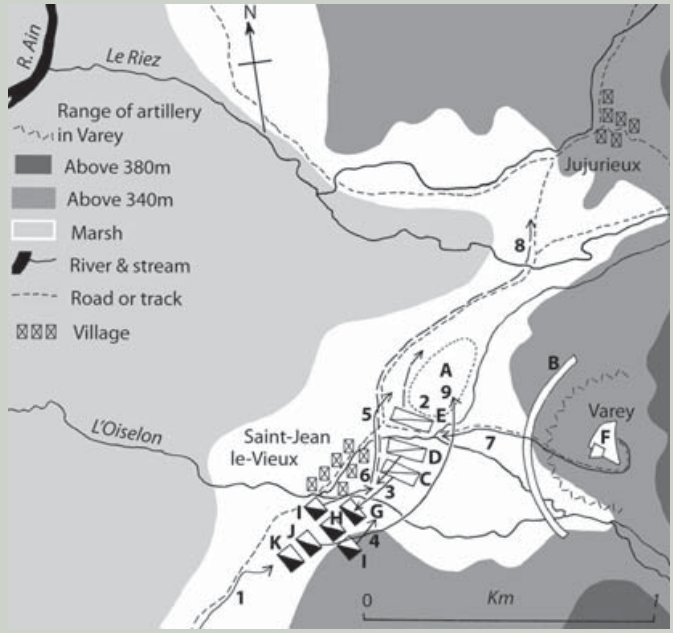
Battle of Varey, 7 August 1325; this occurred during a long war between the Dauphiné, Sayoy and Geneva. Édouard of Savoy and Robert of Burgundy had besieged a Genevan garrison in Varey. The arrival of an allied army of Dauphinois and Genevan forces under the Dauphin Guigues VIII of Vienne forced the Savoyards to array themselves hastily. The subsequent battle was fought almost entirely by cavalry on an area of flat ground now called the Arpilles. An initial Burgundian charge may have been an attempt to kill or capture the Dauphin, but was defeated, and the flanking divisions of Amédée and Hughes of Geneva forced many Burgundians back to the Savoyard camp. Édouard rallied many of these men, and the Savoyards joined the mêlée, but the outnumbered Savoyards were overwhelmed. The Genevan garrison in Varey under Hugues de Tournon clinched the victory by attacking the Savoyard rear.

Initial dispositions:
Army of Édouard of Savoy
(A) Camp
(B) Savoyard siege-lines
(C) *Bataille* of Robert of Burgundy
(D) *Bataille* of Guichard VI of Beaujeu
(E) *Bataille* of Édouard of Savoy
Army of Dauphin Guigues VIII of Vienne
(F) Garrison under Hugues de Tournon
(G) *Bataille* of Raymond des Baux
(H) *Bataille* of Guigues VIII
(I) *Batailles* of Amédée and Hughes of Geneva
(J) *Bataille* of Albert de Sassenage
(K) *Bataille* of Aymar de Poitiers

Movements:
(1) Dauphin Guigues VIII arrives suddenly to relieve Varey; **(2)** Édouard of Savoy deploys in haste; **(3)** Robert of Burgundy charges division of Raymond des Baux, forcing it back; **(4)** Amédée & Hughes of Geneva attack Robert of Burgundy; **(5)** Genevan troops pursue some Burgundians to Savoyard camp; **(6)** Édouard of Savoy rallies Burgundy's division, then, with Guichard VI, enters the fray but is overwhelmed; **(7)** Attack by garrison from Varey causes collapse of Savoyard army; **(8)** Édouard of Savoy and fugitives flee to Pont d'Ain; **(9)** Savoyard camp is pillaged.



they were organized into village-based constabularies or companies, each led by a constable who received twice the pay of an ordinary militiaman. If such local forces were sent to strengthen a nearby town they were placed under the authority of that town's commander, but what happened when they joined a field army is less clear.

French field armies were given different names depending on the campaign envisaged. An *ost*, for example, was normally an offensive force operating outside its own immediate region, usually under the command of the king, a prince or baron. A *chevauchée* was usually defensive, operating within its own area of mobilization. In fact, the pressures imposed by the Hundred Years' War led to notable devolution in the defence of the French kingdom, largely as a result of the distances involved and the inadequacy of communications.

The British Isles

Some earlier local defence structures survived in 14th-century England, particularly in the north of the country. Elsewhere, a number of vulnerable coastal regions were reorganized as *terre maritime* during the 14th century; here, coastal defence against pirates or privateers was considered separately, and was the responsibility of a local bishop or nobleman who supervised or commanded a *garde de la mer* coastal militia. These *posse comitatus* formations included local men-at-arms as well as light cavalry hobelars, and infantry led by the constables of the local hundreds or subdivisions of the county. Within this sophisticated system cavalry were grouped into constabularies, foot soldiers into units known as millenaries, centaines and

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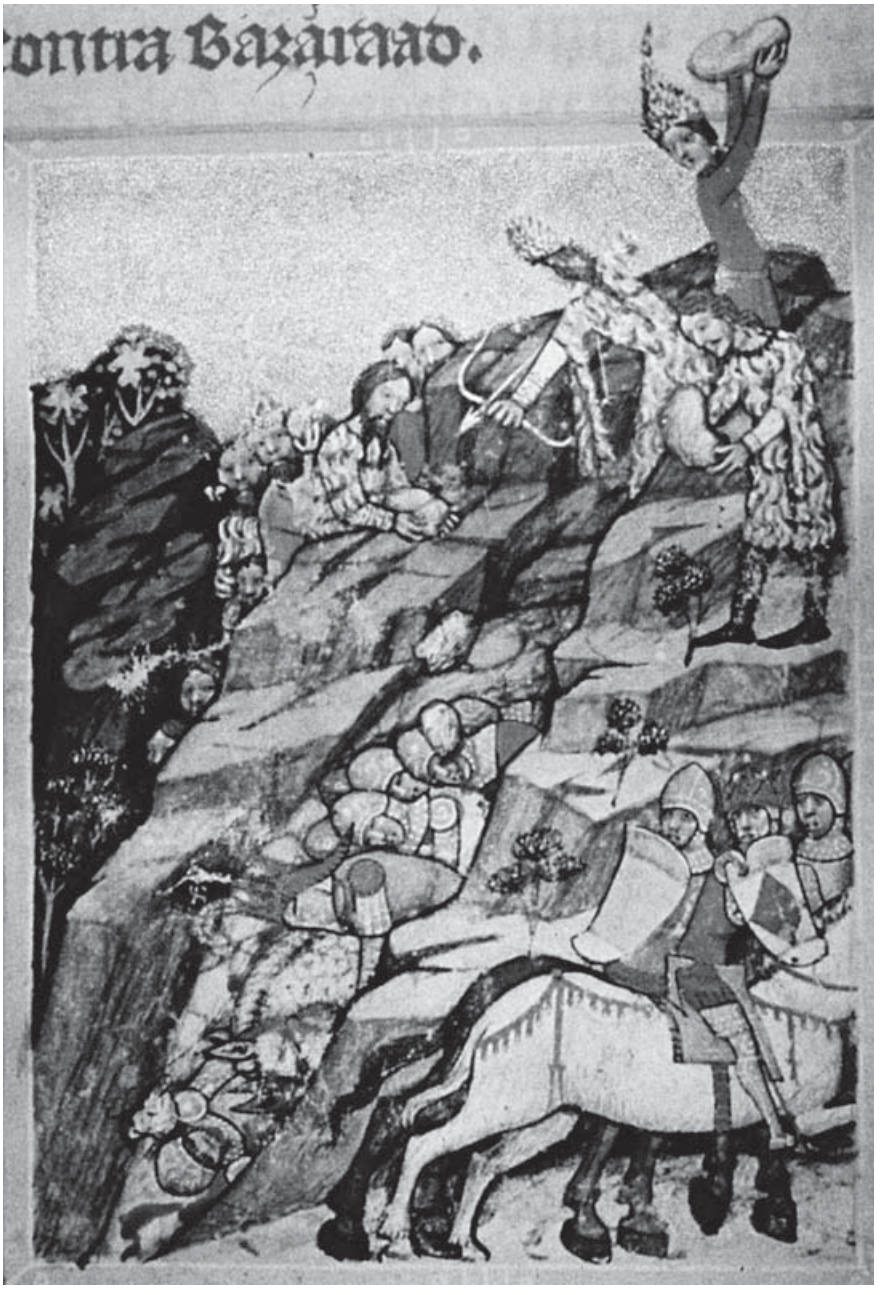

Striking depiction in a Hungarian manuscript of *c.*1360 of King Charles I of Hungary (Charles Robert of Anjou, r.1308–42) being ambushed and defeated in the Carpathian mountains during one of the many civil wars that dogged him during his reign. This typifies the limitations of armoured cavalry in close and broken terrain. (*Hungarian National Chronicle*, National Széchényi Library, Cl. 404, f.72b, Budapest)

vintaines which theoretically consisted of one thousand, one hundred, or twenty men each. These units would then be reviewed by local constables twice a year.

Whereas the independent Kingdom of Scotland attempted to copy several aspects of English or French military organization, at least in southern and Lowland regions, the indigenous Welsh military structures disappeared during the 14th century, being replaced by an English system imposed by the English crown. Much the same happened in those parts of Ireland under effective English rule, though not in the Celtic west, which remained independent in all but name.

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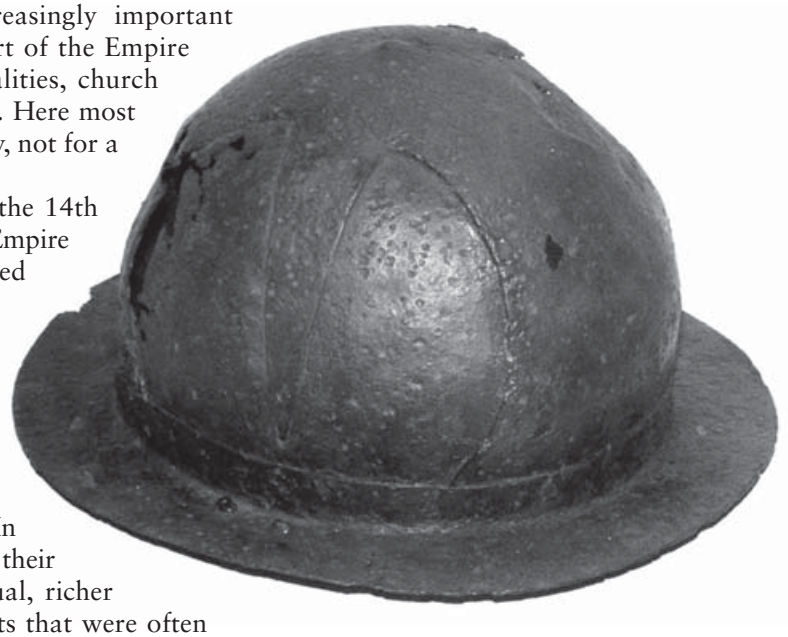
The Empire and Scandinavia

Urban militias played an increasingly important military role as the German part of the Empire fragmented into minor principalities, church estates, free and 'imperial' cities. Here most urban troops fought for their city, not for a distant emperor.

Over the middle decades of the 14th century the cities of the German Empire were divided into clearly defined quarters, usually each with its own gate. Urban militias in what are now Belgium, the Netherlands and some neighbouring regions consisted of constabularies often based upon, and equipped by, the craft and merchant guilds of that city. In other cases the citizens provided their own military equipment; as usual, richer citizens served as cavalry in units that were often supplemented by mercenaries. In many cases militiamen were led by a *viertelmeister* appointed by the city council. He could in turn be supported by other officers, a trumpeter, perhaps semi-professional watchtower guards, and, towards the end of the 14th century, a *buchsenmeisier* or master gunner. Many if not most German cities also had a wagon in which their banners were mounted, comparable to the better-known *carroccio* of an Italian city.



Chapel-de-fer or 'kettle-hat' helmet, late 14th or 15th century. (Museum of Estonian History, Tallinn; author's photograph)

Leagues were another characteristic of later medieval Imperial Germany. These initially consisted of cities which joined together to defend their interests against external threats, pooling their resources, and hiring cavalry known as *knechte der freiheit* or 'knights of freedom' to bolster their own

Guard at the Holy Sepulchre, in an Alsacian carving of *c.*1345. Note the *chapel-de-fer* at top left, the falchion sword, and the shield strapping. (Musée Oeuvre Notre Dame, Strasbourg; author's photograph)

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largely infantry militias. A particularly powerful such organization was the Hanseatic League, which consisted of cities involved in overseas trade. Consequently this league sometimes provided specialist marine infantry to lesser cities, these marines apparently including knights and mercenaries.

Rural militias had meanwhile declined in the Empire, though they survived in certain areas, including the *folgepflicht* of Germany and the *landrecht* of Austria. Some of these rural recruits owed service to a nearby city, much as the inhabitants of an Italian *contado* did to their dominant town. North of the Alps, however, the most important exception to this general decline in rural militias was probably the *dithmarschen* peasant infantry of a particularly isolated part of northern Germany. They would in fact remain a highly effective though localized force until the end of the 15th century.

Scandinavia was another somewhat backward, though by no means isolated part of Europe during the 14th century. Here German influence on military organization continued to be felt and, perhaps as a result, this period saw a considerable increase in the use of crossbows by both professional infantry and urban militias. At the same time, however, many Scandinavian rural levies continued to use ordinary bows.

Diversity of troop types and tactics

A greater variation in types of troops often accompanied organizational changes, one development sometimes prompting the other. These troops included several types of elite infantry, the best of whom might include highly mobile mounted infantry. In other respects, however, there were few changes other than a general increase in the importance of infantry in several parts of Central and Eastern Europe which had previously been dominated by mounted warfare. Elsewhere infantry remained an essential ingredient within all Western European armies, though only occasionally receiving high status and pay.

In Italy, wealthier citizens increasingly preferred to pay money rather than to serve in person in their local militia. As elsewhere, this money was

BATTLE OF LAUPEN, 21 JUNE 1339

On this occasion, massed infantry won a defensive victory over both knightly cavalry and enemy infantry.

As the Confederation of Swiss cantons evolved into what became Switzerland there were frequent clashes between its various elements. These often drew in other areas of the fragmenting Holy Roman Empire. The battle of Laupen saw forces from the cantons of Berne, Uri, Schwyz and Unterwalden facing those from Freiburg, who were supported by troops from the County of Burgundy and the Habsburg domains. When Freiburg and its allies besieged the large Bernese village of Laupen, the Bernese sent a substantial but overwhelmingly infantry force, led by Rudolf von Erlach, to relieve it. Their foes, under Rudolf III von Nidau and Gérard de Valengin, consisted largely of knightly cavalry, plus a well-equipped siege train. Rather than assault the Freiburgers' camp, the Bernese army took up position on a nearby hill, in two large formations of infantry; the outer ranks were armed with long spears, and faced in all directions **(A, A)**.

An enthusiastic cavalry assault by the Freiburgers' 'new knights' – presumably the younger men – caused about a third of the Bernese to flee; but the rest closed up and stood their ground, while the main enemy cavalry force rode around their hilltop position. The relatively less numerous Freiburger infantry **(B, B)** then attacked, but were forced back with significant losses. The Freiburger cavalry **(C, C, C, C)** then stopped riding around the periphery of the battle and formed up in squadrons, attacking the Bernese in order to relieve their infantry. They too were driven off, with the Bernese seemingly targeting the most senior enemy knights – three noblemen are known to have been killed on the Freiburger side. The entire Freiburger army then fled the field; rather than pursuing their defeated foes, the Bernese linked up with the Laupen garrison before returning to Berne.

Inset 1: The Count of Aarburg, killed on the Freiburger side at Laupen.

Inset 2: 14th-century Swiss infantrymen, armed with long spear and crossbow.

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C

C

A

A

B

B

C

C

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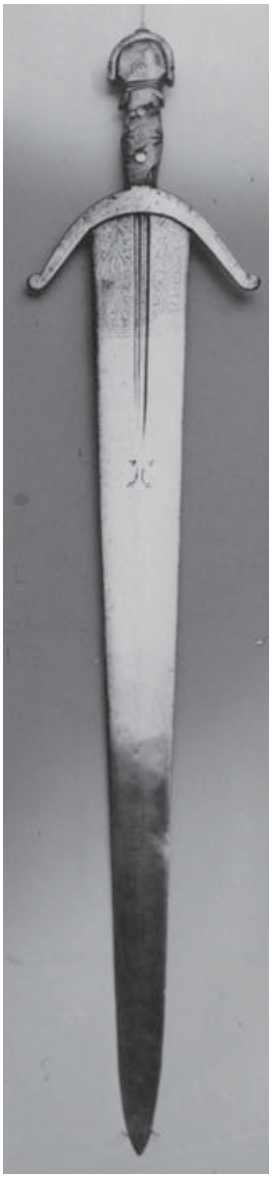

Cinquedea broad-bladed short-sword; Italy, 15th century. (Oakeshotte Collection)

welcomed by local governments because it enabled them to hire *soldati* professional troops, largely recruited from within the city and its surrounding *contado*. Once again, crossbowmen appear to have been in highest demand. Men of Italian origin formed the majority of mercenaries in Italy, large numbers of them being peasants seeking additional income before or after their annual harvests. Yet even here there were regional characteristics: Tuscans were noted as crossbowmen and as spear-armed infantry, whereas men from Lombardy and the Campagna were better known as non-noble cavalry.

Italy was unlike most of its European neighbours in granting relatively high status to infantry archery, largely as a result of the importance of militia crossbowmen. However, this status was also partly due to the remarkable impact that light infantry archers of Sicilian-Muslim origin, now stationed in the city of Lucera, had on Italian warfare before they were forcibly converted to Christianity or massacred at the close of the 13th century.

During the 13th century the expanding French towns gradually became an ever more important source of both wealth and paid troops. Most were infantry, and there seem to have been relatively few urban knights in France. By the end of the 13th century the French crown had seemingly accepted this new state of affairs and had come to rely upon cash to hire mercenaries. At the same time the French cities or communes seemed able to raise large numbers of skilled but non-noble sergeants, mostly infantry.

The smaller infantry contingents sent by French cities to serve in the kings' field armies were probably selected from among poorer artisans who were paid for such duties, in addition to the towns' own semi-professional forces of crossbowmen or sergeants. At certain crucial periods of the year, such as harvest-time, French towns might also hire professional cavalry *gens d'armes* or men-at-arms as well as crossbowmen, to protect their food stores from local bandits or enemy raiders. Mounted crossbowmen had also been known in France since the late 13th century, operating almost solely as mounted infantry. Their military significance was highlighted by the fact that they were paid more than a *sergeant à cheval* or non-noble cavalryman.

During the 14th century the English bowmen became the most renowned of European infantry, yet they remained something of an anomaly resulting from England's distinctive socio-economic circumstances. Comparable archers were known in France and the Low Countries, as well as Poland, Bohemia, Moravia and parts of northern Italy, but only in England did they achieve the status of a military elite during the 14th century. Meanwhile the infantry of northern Wales still largely relied upon spears, whereas southern Welsh foot soldiers soon included large numbers of archers comparable to those of England.

Warfare in late 13th and 14th century Italy may have been on a smaller scale than that in France, but it did just as much damage to lives and property. Italy was by now an exceptionally strongly fortified part of Europe and so sieges, as well as *gualdana* raiding and devastation, remained commonplace. Striking an enemy army while it was on the march, preferably in its flank, was another favoured tactic that does not seem to have been used to the same extent north of the Alps. In Italy armies normally marched with archers and crossbowmen at their head, a banner-wagon in the centre, and cavalry in the rear to protect the baggage train. Of course, notable battles did take place, but generally had even less impact on the outcome of wars than did the great battles of the Hundred Years' War between England and France.

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An illustration of battle in a mid-14th century French translation of Titus Livius, *c.*1370. (*Décades de Tite-Live*, Bibliothèque Municipale, Ms. 730, Bordeaux)

Despite the variations seen in different corners of Europe, 14th-century battles normally began with skirmishing between archers or crossbowmen. Such troops would also be positioned to protect the flanks of an army in battle array, while a commander naturally attempted to secure his flanks by using physical obstacles or natural cover. The army itself would then usually be drawn up in two, three, or – more rarely – four divisions. Though this could be seen as the 14th century norm, there were considerable variations

Spanish (left) and Moorish riders in combat, on a mid-14th century ceiling painting by an Italian artist. (*in situ* La Sala de los Reyes, Alhambra, Granada; author's photograph)

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'Great bascinet' found in Tunis; Italian, *c.*1450. (Musée de l'Armée, inv. L66, Paris; author's photograph)

in the degree of control a commander could impose, as well as in the discipline of his men and the numbers of casualties endured.

For example, a widespread belief that later medieval Italian warfare consisted of battles with hardly any casualties is entirely wrong, and remained untrue even during the later 14th and 15th centuries when *condottieri* companies dominated Italian warfare. In reality, the changing tactics of 14th-century Italian warfare led to a greater reliance on disciplined infantry. Since these were expected to stand firm in the face of cavalry attacks, it was almost inevitable that there were higher casualties than had been seen in earlier years. One distinctive 14th-century Italian infantry tactic, largely resulting from the influence of Sicilian-Muslim foot soldiers in the 13th century, was the offensive use of light infantry in close co-operation with cavalry. Such troops charged enemy cavalry alongside or even among their own horsemen, and then attacked the enemy's horses rather than the riders.

The crossbowmen of northern Italy were employed in large numbers inside and beyond the peninsula. Such troops often wore substantial body armour and normally operated in close co-operation with the *pavesari* shield or mantlet-bearers, whose role was to protect them from other archers or cavalry as they spanned and loaded their weapons. A crossbowman and a shield-bearer were in fact often paid as a team, though the man with the crossbow got more than half of the money. (Here it should be noted that the decisive defeat of the French army's Genoese mercenary crossbowmen at the battle of Crécy in 1346 seems to have resulted from them lacking their usual accompaniment of shield-bearers; thus they were exposed to the unexpected firepower of English archers.)

Whether the appearance in Italy of Hungarian light cavalry, including true horse-archers, prompted the recruitment of mounted crossbowmen is unknown. Such troops were probably known in late 13th-century Italy, especially in the south, but they normally operated as mounted infantry – only rarely were they said to have shot from the saddle against static targets such as ranks of enemy infantry.

In tactical terms the urban militia armies of Flanders also relied upon mixed forces, including light infantry armed with small shields, swords and heavy single-edged falchions. They normally stood behind a line of foot soldiers armed with long spears or pikes, with the addition to the fearsome *goedendag*, which was a combined mace, cutting and thrusting weapon.

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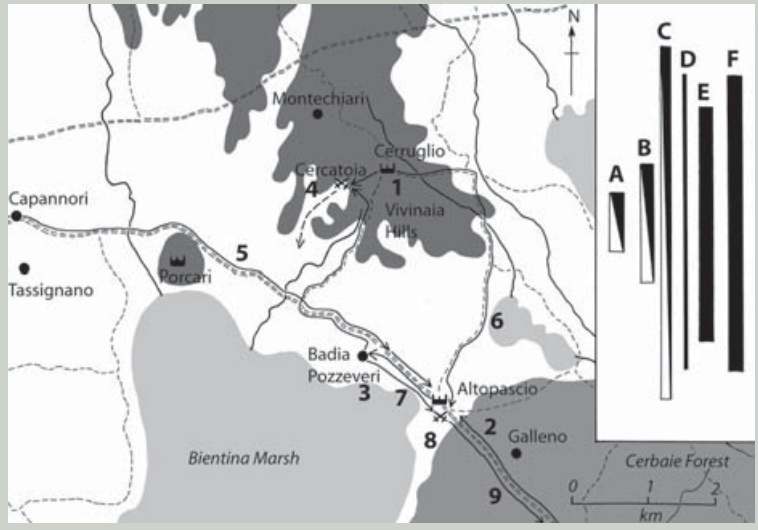
The campaign of Altopascio, August-September 1325, which in several respects epitomized strategy in the 'Age of the *Condottieri*'. The contemporary Florentine chronicler Giovanni Villani, who was interested in statistical information, also provides remarkable detail about the size, structure and array of the armies.



Florentine array, according to Villani:
(A) *Feditori* heavy cavalry advance guard (150 men)
(B) Second cavalry corps under De Borne (750 men)
(C) Third cavalry corps under Ramon Cardona (1,450 men)
(D) Pavesari 'shield-bearers' (500 men)
(E) Crossbowmen (1,500 men)
(F) Infantry main force (*c.* 6,000 men)

Movements:
(1) As the Florentine (Guelph) army under Ramon de Cardona approaches, the Ghibelline commander Castruccio Castracani takes shelter in Cerruglio
(2) Florentines besiege Altopascio for three weeks; the small garrison surrenders on 25 August
(3) Florentines make camp at Badia Pozzeveri, but suffer mounting losses due to marshy, unhealthy climate; Cardona sends units to look for a better location
(4) A Florentine unit is destroyed by Castracani's troops at Cercatoia, 11 September
(5) Ghibelline reinforcements under Azzo Visconti march to support Castracani
(6) Castracani marches to link up with Visconti
(7) Learning of the Ghibelline approach, Cardona heads for Galleno but is confronted by Castracani outside Altopascio, 23 September, and battle ensues
(8) Cardona attacks Castracani. An initial Florentine cavalry charge appears successful, but a second is held by Ghibelline infantry, then driven back by a counter-charge; Florentine infantry are disrupted by fleeing cavalry. The arrival of Visconti blocks any escape; most Florentine commanders are captured
(9) Castracani ravages Florentine territory

The battle of Auberoche, 21 October 1345. When the French commander Count Bertrand de l'Isle-Jourdain besieged Auberoche, the Earl of Derby – the English commander in Bordeaux – asked the Earl of Pembroke to help him relieve the castle. When Pembroke failed to appear in time Derby decided to challenge De L'Isle with a relatively small force; the latter was unaware that the Anglo-Gascons were so close. After making a personal reconnaissance on foot Derby noted that the other side of the wooded hill facing the French camp was too steep for a direct cavalry charge. He sent mounted men-at-arms, probably under Walter Manny, along this route, with orders to array under cover of trees. Derby led his archers through the woods, having them dismount and draw up just within the forest. Taken completely by surprise, the French suffered large casualties, and only a few leaders were even able to array their troops. Derby's tactical masterpiece thus demonstrated good use of reconnaissance and terrain, tight command and control, and efficient co-ordination of archery 'firepower' with the shock effect of knightly cavalry.

Initial dispositions:
(A) Anglo-Gascon garrison under Sir Frank Halle
(B) French siege positions
(C) Main French camp
(D) Camp of Derby's Anglo-Gascon relief army

Movements:
(1) Afternoon of 21 October: Earl of Derby sends Anglo-Gascon cavalry to cross the wooded hill; **(2)** Anglo-Gascon archers deploy within range of French camp; **(3)** Archers shout war-cry, unfurl banners and shoot at the enemy; **(4)** Hearing the archers' war-cries, the Anglo-Gascon cavalry attack up the valley; **(5)** Taken by surprise, only a few French leaders can assemble their troops; **(6)** Garrison in Auberoche castle breaks through besiegers to attack French camp from the north; **(7)** Attacked from three sides, the French flee, and the Count de l'Isle is captured; **(8)** French besiegers outside Auberoche retreat.

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Removable gun breeches from 14th or 15th-century breech-loading cannon. If several breeches per gun were pre-loaded, a repectable rate of fire would have been achieved. (Ghent Castle Museum; author's photograph)

While Flemish light infantry attacked the enemy, the *goedendag* and pike men formed a 'fortress' into which others could retreat if necessary. The role of Flemish crossbowmen remained almost entirely static, attempting to keep enemy archers at a safe distance. Normally such Flemish infantry fought in a broad phalanx formation, but they could form a circle if surrounded.

In France, some raiding forces could be small and often included a high proportion of infantry to cavalry. Two well-recorded examples from the early 14th century concern raiding forces which had from ten to 17 foot soldiers for every horseman. In defensive terms, the French appear to have learned guerrilla warfare skills during the 13th-century Albigensian Crusades in southern France. This may have enabled their leaders to accept a cautious, even devious form of warfare which had little in common with chivalric ideals. It may similarly have contributed to the 14th-century French military aristocracy's increasing willingness to operate in close co-operation with skilled infantry. At the same time, late 13th-century French armies had refined their tactics against enemy raiders – tactics that nevertheless caused disaster during the early decades of the Hundred Years' War, by leading to major battles against English invaders who had themselves by now developed even more effective battlefield tactics.

In early 14th-century France it remained normal for the bulk of the infantry to be placed slightly ahead of the commander and, like the cavalry, to be divided into *battailles*. Nevertheless, French infantry continued to play an essentially static role, while the commander generally led by example rather than conducting operations from a position of relative safety – at least, until this practice led to a series of catastrophic defeats by the English.

On the march through hostile territory, 14th-century English armies tended to move in the same 'battles' or divisions in which they fought, with armoured cavalry men-at-arms and mounted infantry archers protecting van and flanks. Towards the end of the 13th century the English are believed to have adopted some aspects of Scottish infantry warfare, with the addition of their own greater discipline, better weaponry and much greater numbers of archers. The resulting tactics were those that crushed the flower of French chivalry during the first decades of the Hundred Years' War. In its fully developed form the 14th-century English battle array consisted of a *herce*. Here archers could either be intermingled with dismounted men-at-arms or be placed slightly ahead, either immediately in front or as forward-thrusting flanks. The archers would usually seek protection behind ditches or natural obstacles if these were available, or they could erect a field fortification of sharpened stakes.

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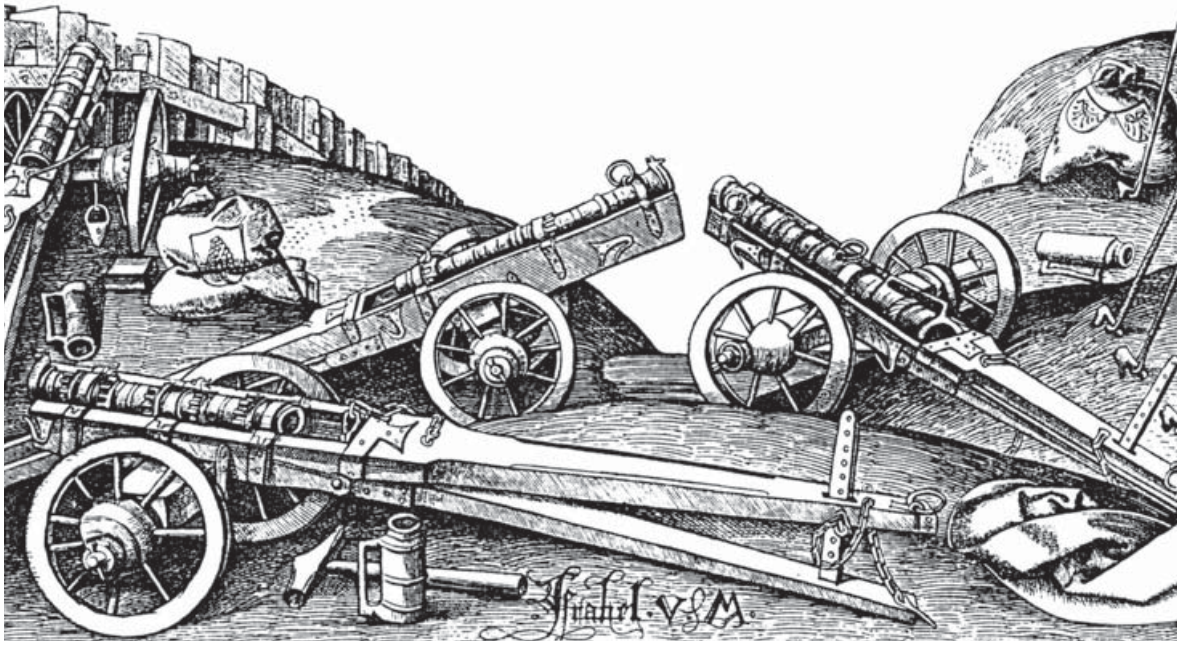
So little is known about earlier Western European archery techniques that it is almost impossible to say whether they changed by the 14th century. The famous English 'longbow-men' were clearly using shower-shooting techniques similar to those employed by infantry archers in early medieval Byzantine and Arab-Islamic armies. This tactic involved archers not aiming at a specific target but loosing their arrows at a high trajectory into a predetermined 'killing zone', with the intention of raining arrows on an advancing foe. Even though English archers could achieve a shooting rate of 15 arrows a minute, such shower-shooting probably caused relatively few mortal wounds. On the other hand, the rain of (notably heavy) arrows undoubtedly had a huge moral impact, as well as wounding and panicking the enemy's still largely unarmoured horses. In fact the huge casualties suffered by French men-at-arms at the hands of English infantry were usually inflicted by daggers, swords and polearms, often during or immediately after the confusion resulting from ranks of horsemen being baulked by a line of sharp stakes. On the other hand, the ability of English archers to stand and face such cavalry charges, whose primary purpose was moral rather than physical, says a great deal for their discipline and confidence.

Warfare among the Celtic peoples largely consisted of raids, counter-raids, guerrilla resistance and ambush tactics. However, the armies of southern and Lowland Scotland fought in much the same way as those of northern England. Their infantry *schiltron* units would adopt a close circular formation if menaced by enemy horsemen, but in so doing they presented an ideal target for English archers – to whom the Scots, with their fewer bowmen, could make little reply. Despite this disadvantage the Scots evolved effective spear tactics, perhaps using early versions of the long-hafted pike, though such tactics still remained vulnerable to archery. In contrast, the Welsh and the Irish rarely stood against the terrifying power of English archers, instead relying upon harassment and ambush tactics. Indeed, the Irish brought ambush techniques to a fine art, particularly in the western forests and bog-lands.



Cannon and associated equipment, including removable breeches, in the *Theil eines Kupferstiches* by Israel von Meckenen, *c.*1500. (Deutsches Historisches Museum, Berlin)

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The Swiss, unlike Scottish infantry, seem to have fought in deep columns rather than broad phalanxes, perhaps having adopted this from their German or Italian neighbours. A massed charge by a halberd and pike-armed Swiss infantry column could also be very effective against cavalry if the latter allowed themselves to be caught in a confined space such as a mountain valley. When Swiss forces in turn found themselves caught in the open, they are said to have adopted a 'hedgehog' formation that was apparently circular, with the infantry using pikes to protect themselves on all sides. By the later 14th century such pikemen dominated Swiss armies, while a reduced number of halberdiers dealt with any enemy who broke through the pikes.

FROM KNIGHT TO MAN-AT-ARMS

The 14th to mid-15th centuries

Despite major setbacks suffered at the hands of English invaders in the Hundred Years' War, **France** continued to provide a military model that most of the rest of the continent attempted to follow. The general *arrière ban* or summons to military service during an emergency remained, in theory and in law, though it was rarely used in practice in the decades preceding the Hundred Years' War. There would then be a remarkable revival of this tradition, which meant that despite crushing defeats at the hands of English invaders, French monarchs rarely had difficulty in raising large armies. Pay appears to have been good, and there were at first plenty of volunteers, but by the late 14th century military and financial conditions were getting more difficult for France, while even in England the financial and social pressures of this period were acute.

E

BATTLE OF NICOPOLIS, 25 SEPTEMBER 1396

This complex series of engagements demonstrated the ability of Western men-at-arms to fight effectively on foot against lighter Muslim troops, but within limits of terrain and duration; and also the resilience of Muslim light cavalry.

While besieging the fortified Ottoman-held town of Nicopolis (now Nikopol) in Bulgaria overlooking the lower Danube, a Crusader army largely consisting of Franco-Burgundians, Hungarians and Wallachians was surprised by the sudden approach of an Ottoman Turkish army led by Sultan Bayazid I, accompanied by a Serbian vassal contingent under Stefan Lazarevic. Bayazid made camp on a hill **(top of plate)** above a steep, wooded valley. His front line consisted of *akinci* light cavalry under Gazi Evrenos. Then came Ottoman infantry defended by wooden stakes, with Rumelians (Balkan troops) on the right, Anatolians on the left, and perhaps Janissaries in the centre. They were flanked by *sipahi* provincial cavalry – again, Rumelians on the right, Anatolians on the left. A third line, out of sight of the Crusaders beyond the crest of the hill, consisted of Bayazit's household cavalry on the right and Lazarevic's Serbian cavalry on the left.

Ignoring the advice of their more experienced Hungarian and Wallachian allies, the Franco-Burgundian leadership insisted on attacking the enemy with a vanguard of armoured cavalry under the young Count of Nevers **(A1**, **A1**, **A1)**. Behind them were Hungarians and smaller Crusader contingents under King Sigismund, plus Wallachians on the left and Transylvanians on the right. The Franco-Burgundians pushed too far ahead of the other Crusader formations, dispersed the *akinci* **(B)** – who would nevertheless re-form later in the action – and then attacked the enemy infantry. Many knights were unhorsed, or dismounted to pull up the defensive stakes in order to get at their enemy **(A2**, **A2**, **& inset 1)**. After a bitter struggle the Crusader knights broke through the Ottoman foot soldiers **(C**, **C**, **C)** and repulsed the provincial *sipahi* cavalry **(D)** – who would also regroup subsequently. Exhausted, but believing themselves victorious, the Franco-Burgundians were then attacked by Bayazit's household division **(E**, **E**, **E)**. The Crusaders resisted briefly, then either surrendered or fled towards the Danube.

The Ottomans then advanced against the approaching Hungarians, Wallachians and Transylvanians. The Christians dispersed the *akincis* and Ottoman infantry for a second time; but as the Ottoman cavalry attacked the Crusaders, Lazarevic led his Serbs in a sweeping movement to attack the flank and rear of the Hungarian main force. The main Christian banner fell, whereupon the Crusader forces retreated in initially good order to the river, pursued by the Ottomans. Some escaped to Wallachia, others aboard ship downriver, but a large number were taken prisoner.

Inset 2: Fully armoured Burgundian knight and Serbian light cavalryman.

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'The Betrayal' – alabaster carving of Christ being taken in the Garden of Gethsemane; probably English, early 15th century. (Bode Museum, Berlin; author's photograph)

Meanwhile the increasing unwillingness of a large part of the lesser nobility to fulfil their traditional feudal military obligations in person encouraged both French and English rulers to try to insist that men possessing more than a certain level of wealth become knights, whatever their social origins. This was little more than an unsuccessful stop-gap measure, and for a variety of social, military and economic reasons the old feudal order was clearly fragmenting. Consequently, recruitment increasingly relied upon a system of indenture and contract, under which a military leader received *lettres de retenue* from the king or a senior baron, stating in detail how many troops of what types were required in return for a specific sum of money. The main difference between French and English indenture systems was the less rigid character of French contracts.

In France, even in the late 14th century, feudal, paid and volunteer cavalry still mustered in the presence of one of the marshals or his deputies. Although the Master of Crossbowmen seems normally to have been responsible for all infantry forces, he sometimes also commanded cavalry. Meanwhile it was usual for mercenary cavalry from outside the Kingdom of France to be commanded by French knights or barons while on active campaigns, as was also the case with domestic cavalry. Hence these knights and barons formed the middle ranks in the chain of command. Such men were expected to have considerable skill in arms, though only a few would have gone to the lengths of the famous French knight and subsequently commander, Boucicault. According to the somewhat idealized *Life of Boucicault* he followed a strict body-building routine, spending hours practicing with heavy mace and axe. Wearing full armour, he would run long distances, turn somersaults, and leap onto his horse without using stirrups.

England

In 14th-century England the types of troops required generally consisted of armoured cavalry men-at-arms, hobelar light cavalry, assorted archers and other infantry. Their costs and conditions of service also had to be negotiated, after which the contracted commander was responsible for raising the force, usually through sub-contracts with junior commanders, the lesser nobility, local gentry and their tenants. The (originally Celtic Irish) hobelar light horsemen played an increasingly important role, often operating in close co-operation with fully armoured men-at-arms and mounted infantry archers during deep penetration raids into Scotland and later into France. During some mid-14th century campaigns hobelars may actually have been strategically more important than the famous English archers.

By the early years of the 14th century, there had been significant modernization in English military organization as a consequence of

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King Edward I's Welsh and Scottish wars. Thereafter, the success of English arms in the Hundred Years' War may have led English influence to be felt in France, having flowed in the other direction for several centuries. However, such victories probably led to complacent military conservatism, resulting in English military structures again slipping behind those of France, Burgundy and Italy by the end of the 14th century. English military forces were divided into the king's army, built around the Royal Household, and a much larger array of local defence forces. The knights of the Royal Household formed a small but effective standing army which also provided a core of experienced soldiers capable of exercising military leadership. The Royal Household also provided vital administrative, organizational and storage facilities.

Italy

Further afield, a number of military setbacks seriously undermined the reputation of urban cavalry militia forces in late 13th-century Italy, whereas the reputation of infantry militias remained intact or was even enhanced. As a result, the first large-scale recruitment of 'foreign' mercenaries involved armoured horsemen rather than foot soldiers. Indeed, such cavalry often seems to have been in greater demand in later 13th and 14th-century Italy than were the better-known crossbowmen. In addition to Italian knights from families with traditions of military service, French veterans of campaigns in Angevin French-ruled southern Italy were enlisted in late 13th-century northern Italy. Germans were similarly hired in considerable numbers, though usually in groups rather than as individuals. Although the first records of identifiable mercenary 'companies' date from the 1320s, such ready-made mercenary armies came to dominate later 14th-century Italian warfare.

King Henry IV of Castile equipped as a light cavalryman *a la jinete* – a clear proof of the prestige of such troops in Spain. Henry's death in 1474 would eventually lead to the joint reign of his sister Isabella and her husband Ferdinand of Aragon, the 'Catholic Monarchs' who completed the *Reconquista* from the Moors of Andalusia. (*Geneologia de Los Reyes*, Biblioteca Palacio Real, Madrid)

Nevertheless, domestic conscripts and volunteers were still preferred to mercenaries in many parts of 14th-century Italy, most notably in Venice. During that century Venice developed into a land as well as a naval power, though its first significant mainland territories were in the Balkans and Greece. The first true Venetian standing army then emerged quite suddenly early in the 15th century, consisting, as elsewhere in the peninsula, of *condottieri* contract soldiers. Such a force was needed to defend the new mainland Italian territories of the *Terra Firma*. As a result, the Republic's contribution to an alliance with Florence in 1426 consisted of no less

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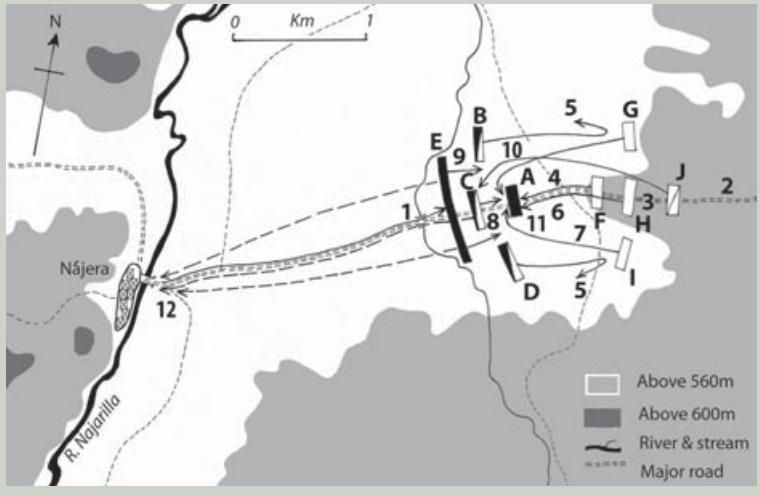
The battle of Nájera, 3 April 1367, saw a clash of different tactical traditions. King Enrique II of Castile ignored the advice of his French allies, who had experience of fighting English infantry archers, and decided to fight in open ground where his cavalry would hopefully be more effective. Adopting a position east of a small, perhaps dry streambed, Enrique II now accepted French advice and dismounted the largely French vanguard of men-at-arms led by Du Guesclin. The Anglo-Gascon army commanded by the Black Prince advanced in battle array; when they came in sight of the Castilians the Prince paused, ordered all troops except for the rearguard to dismount, and advanced against King Enrique. The latter's crossbowmen could not compete with the Anglo-Gascon archers and were driven from the field. The Castilian cavalry were similarly unable to get close enough to their enemies to use their weapons, suffered heavily from archery, and were also driven from the field, being unable to break through to support the dismounted vanguard. The Black Prince's mounted rearguard then charged around one flank, and the Castilians fled. Du Guesclin's men – surrounded, hugely outnumbered and alone – eventually surrendered.

Initial dispositions:
Army of Enrique II of Castile
(A) Vanguard under Bertrand du Guesclin – dismounted men-at-arms & crossbowmen
(B) Left wing under Don Tello – largely light cavalry & crossbowmen
(C) Centre under King Enrique – cavalry & crossbowmen
(D) Right wing under Count Alfonso of Denia – cavalry & crossbowmen
(E) Infantry rearguard
Army of Don Pedro & the Black Prince
(F) Vanguard under Duke of Lancaster – dismounted men-at-arms flanked by archers
(G) Right wing under the Captal de Buch – dismounted men-at-arms & archers
(H) Centre under the Black Prince and Don Pedro – dismounted men-at-arms & archers
(I) Left wing under Sir Thomas Percy – dismounted men-at-arms & archers
(J) Rearguard under the King of Majorca – cavalry and archers



Movements:
(1) King Enrique advances eastwards and deploys beyond small stream; **(2)** Black Prince advances in battle array, partially screened by curve of hill; **(3)** Within sight of enemy, Black Prince dismounts all troops except for rearguard, then advances. **(4)** English archers drive off Castilian crossbowmen. The dismounted vanguards remain locked in combat thoughout the battle. **(5)** Enrique's left and right wings attack opposing wings, but Anglo-Gascon archers prevent them from closing, and they then withdraw; **(6)** Black Prince's centre joins fight against Du Guesclin's vanguard; **(7)** Anglo-Gascon wings surround Du Guesclin; **(8)** Enrique's centre are unable to break through to help Du Guesclin; **(9)** Enrique's infantry cannot respond to Black Prince's archers; **(10)** Anglo-Gascon rearguard attacks Enrique's troops, who break. **(11)** Isolated, Du Guesclin's vanguard surrenders; **(12)** Fleeing Castilians are trapped by narrow bridge over R. Nájarilla; King Enrique escapes but many nobles are captured.

than 8,000 cavalry and 3,000 infantry in time of war, and 3,000 and 1,000 respectively in peacetime. The almost continuous warfare of the first half of the 15th century led to standing armies, their support systems and the associated taxation becoming an accepted fact of Venetian life, while the mainland city of Brescia became the de facto headquarters of the Venetian army. Light cavalry had not been a major feature of Italian warfare, only appearing later and largely as a result of 15th-century Spanish influence.

Southern Italy had for centuries been socially and militarily very different from the north. These differences increased during the 14th century when, having previously been united under Norman conquerors, the south was divided between an Angevin or French-ruled mainland Kingdom of Naples, and an Aragonese Spanish-dominated Kingdom of Sicily. These dynasties introduced new military ideas which reinforced existing differences between the northern and southern parts of the peninsula, perhaps the most significant being the Kingdom of Sicily's greater use of light cavalry. In both these areas 14th-century armies consisted of the remaining feudal forces, plus indigenous mercenaries and a remarkably large number of foreign troops. By the late 13th century the Angevin rulers of southern Italy were already recruiting Albanians as well as Balkan Slavs from the other side of the Adriatic Sea. Large numbers eventually settled in southern Italy, bringing with them distinctive military and tactical traditions.

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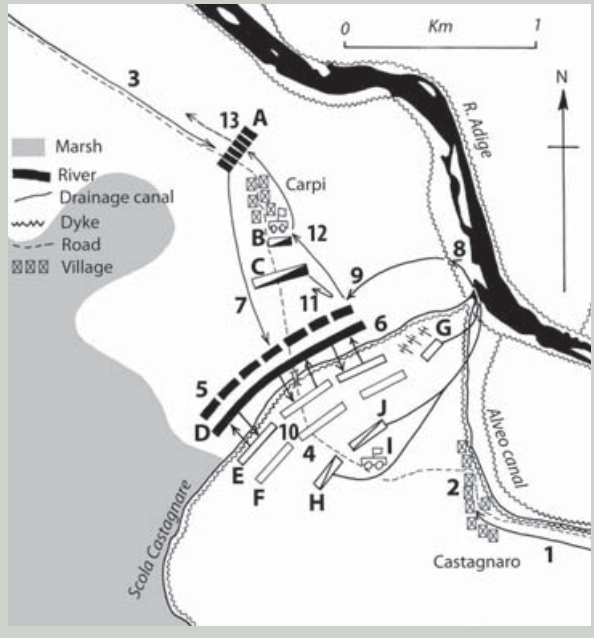
In northern and central Italy, heavy cavalry mercenaries were generally grouped into *conestabularia* under their own leaders, with rarely more than 50 men in each formation. During the 14th century Italian cavalry formations were also described as consisting of smaller units or 'lances' each under a *caporale*, which were in turn grouped into larger *bandiera* companies with a trumpeter, fifes or drums. The self-contained mercenary companies of 14th-century Italy were remarkably disciplined institutions. Many were governed by their own rules, with agreed systems for sharing booty, while provost marshals maintained order. Some companies had their own judges, sometimes with portable gallows to punish those who broke the regulations.

Real changes were seen in Italian military organization and recruitment early in the 15th century. Prolonged warfare had already inflated the armies of Naples and the Papal States; 30 years of conflict would now similarly alter the armies of Milan, Florence and Venice. The days of the 'Great Captains' were passing, as had those of the 'Free Companies'; *condottieri* still led the way, but behind them marched state-administered, almost national, armies.

The Empire and Eastern Europe

Many autonomous 'imperial cities' owing allegiance directly to the Emperor were dotted across Germany, but these tended to be separated from one another by extensive baronial realms. Although such imperial cities still

The battle of Castagnaro, 11 March 1387, was an example of defensive tactics, inspired by English successes in the Hundred Years' War, being used in another country. The opposing forces were Veronese led by Giovanni dei Ordelaffi, and Paduans under the English mercenary Sir John Hawkwood. Hawkwood was besieging Verona, but when his lines of communication were threatened he retreated along the R. Adige; ordering that provisions be brought across the river, on the night of 10 March he made camp at Castagnaro. This position had been strengthened by recent wet weather; beyond a dyke and drain the meadows were softened by rain. Ordelaffi had a substantial army including militia, but his artillery was lagging behind. On the morning of 11 March he arranged most of his troops for an infantry assault because the soft ground and water obstacles seemingly ruled out a cavalry attack. This tactic appeared to be succeeding; but Hawkwood knew that it was possible for a mounted force to get around the north-eastern edge of the battle. This attack struck the rear of the Veronese left flank, and after a brief struggle Ordelaffi was captured; Hawkwood also seized the Veronese banner-wagon.



Initial dispositions:
Veronese army
(A) Infantry militia & levies
(B) Veronese *carroccio* & cavalry guard
(C) Small cavalry reserve
(D) Dismounted men-at-arms
Paduan army
(E) First line of men-at-arms
(F) Second line of men-at-arms
(G) Cannon guarded by crossbowmen
(H) Cavalry & mounted-infantry archers
(I) Paduan *carroccio*
(J) Cavalry and mounted-infantry archers

Movements:
(1) Paduan provisions, ferried across R.Adige; **(2)** Paduan army under Hawkwood stops at Castagnaro; **(3)** Veronese army pursues Paduans. **(4)** Early morning 11 March, Hawkwood arrays his troops along Scola Castagnare ditch; **(5)** Ordelaffi arrays Veronese dismounted men-at-arms for infantry assault, and prepares fascines to fill ditch; **(6)** first Veronese assault fails but fills ditch with fascines, so Hawkwood commits Paduan second line; **(7)** Ordelaffi commits some militia; outnumbered Paduans are pushed back; **(8)** Hawkwood leads cavalry & mounted-infantry archers in wide hook around eastern end of line, being joined by crossbowmen and gunners; **(9)** Hawkwood's archers & crossbowmen shoot into Veronese left flank, followed by a mounted charge; **(10)** Hawkwood's second-in-command Ubaldine attacks across ditch. **(11)** Ordelaffi's cavalry counter-charge is hampered by retreating Veronese infantry; **(12)** Hawkwood captures Veronese *carroccio* and attacks remaining Veronese levies, who flee; **(13)** Veronese militia unit under Giovanni da Isola resists, and is destroyed.

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theoretically owed knightly cavalry service to the Emperor, by the beginning of the 14th century few still did so in reality. Here, as in Italy, mercenaries increasingly dominated cavalry forces.

Meanwhile, military and administrative reforms and economic expansion lay behind the sudden emergence of huge central and eastern European states during the 14th century. Poland, though long established as a national state, did not take much part in this process and was, indeed, more a victim than an aggressor. While the process of Western feudalization and knight service continued, some eastern regions of Poland were now under strong Eastern and even Mongol military influence. This became apparent in arms, armour and tactics, though it is less clear in terms of organization. Meanwhile the great-power status of 14th-century Hungary was based on its military effectiveness in relation to its Western as well as Eastern European neighbours. Although several of these regions were characterized by a continuing importance of light cavalry, this was frequently a consequence of economic rather than military factors. In Poland, for example, the majority of horsemen would have been considered light cavalry by their Western neighbours, because most were too poor to afford new and heavier styles of Western European armour.

During this period the elite armoured cavalrymen of Germany came to be known as *panzerati* or *renner* men-at-arms rather than *knechts* or knights, the latter term generally coming to mean a military servant. Such armoured horsemen were normally organized into *gleven* comparable to the 'lances' of France and Italy. At first such a unit generally consisted of the man-at-arms plus three armoured sergeants, but later the sergeants were replaced with either *diener* lightly-armed servants, or three hired mercenaries. One would have been an armoured cavalryman, the second a light cavalryman or mounted crossbowman, and the third a servant or page.

The success of Germany's urban leagues now prompted the formation of Leagues of Knights, associations of minor rural aristocrats who combined to defend their interests against the increasingly powerful urban centres. These would also sometimes hire themselves out as mercenary units. More exotic elements were provided by Cuman light cavalry auxiliaries from Hungary, who were of ultimately Kipchaq Turkish tribal origin.

Strategy and tactics

The strategy and tactics employed by these varied 14th-century European armies clearly varied themselves, though many commanders still looked to France for inspiration. Until the second half of the 14th century French strategy and tactics remained essentially the same as in the later 13th century, though with considerably less success. Later 14th-century French armies reverted to battle-avoiding warfare of an almost guerrilla type, which successfully wore down the invading English. In response, 14th-century English armies adapted their raiding tactics to an extreme degree; the term *chevauchée* in this context refers to expeditions out of English-held territories in the north and south-west of the country that burned and pillaged across the whole of France.

On the battlefield, armoured cavalry remained the only real offensive element in French armies until the mid-14th century, and these troops still relied on a direct charge with couched lances. Maces and swords were used in the resulting mêlée if these heavily armoured men-at-arms made physical contact with their foes. Such tactics could still succeed spectacularly, as they

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did in the mid-15th century battle of Formigny. Here the English greatly outnumbered the French and the latter's men-at-arms were relatively few in number; however, the English attempted an over-ambitious turning movement when threatened from their left flank, and this manoeuvre was smashed by a series of cavalry charges.

On a more personal level, close-combat styles did not fundamentally change during the 14th century, though a significant difference developed in the way cutting and thrusting swords were used, and two distinct forms of blade thus emerged in different parts of Europe. In Italy, for example, a preference for a thrusting rather than a cutting style of swordsmanship had a venerable tradition. During the 14th century this so-called 'Italian grip' came into fashion more widely, being characterized by the swordsman wrapping the forefinger of his sword-hand around a quillon of the weapon's hilt. (In reality the habit was of early medieval Persian or even Indian origin, and reached Italy via the Islamic Middle East or Spain.) From Italy, the 'Italian grip' subsequently spread across most of later medieval and early modern Europe.

Wall painting of Jouvenel des Ursins and his family at prayer. This French nobleman wears typical heraldic 'coat-armour' of the mid-15th century. (Musée Medievale, Paris; author's photograph)

FORTIFICATIONS & FIREARMS

Up to the mid-15th century

Control of territory in later medieval warfare essentially meant the control of fortified places, ranging from simple castles to great fortified cities. This fact lay at the centre of the strategies used by both England and France during the Hundred Years' War. Consequently, when it came to defence and the sharing of information or supplies, French urban authorities usually maintained close co-operation with other towns within the same *senechaussée* or military region. Established communication systems might spread far further, with towns having their own consuls in sometimes distant cities.

Representatives from neighbouring towns consulted frequently, and had to deal with both French and English officials. Similarly, local feudal lords and barons exchanged information with urban authorities as well as each other, and all seem also to have discussed other matters such as royal tax demands. Furthermore, towns employed spies as well as messengers, while posting early-warning observers in the surrounding countryside in times of trouble. Such men used smoke signals, bells, flags and other means to raise

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The burst barrel of a bronze hand-cannon; Italy, 15th century. (Private collection)

the alarm, and some rural communities of closely neighbouring villages appear to have done the same on a smaller scale. The primary function of such mutual defence arrangements was to obtain knowledge about enemy troop movements and the activities of roving companies and *routiers*. It was also necessary to know who was and who was not prepared to pay the *pâtis* protection money demanded by various armed bands.

Information on enemy strengths and actions could be remarkably precise, and some of these events are recorded in surviving documents. For example, in 1359 the defence of the Auvergne was the responsibility of Thomas de la Marche with a force of 700 men-at-arms and 200 sergeants. That year he announced his willingness to do battle with the English if the region could raise a further 400 troops. Although the Count of Auvergne did not respond, several local towns did so; their authorities now formed an urban league, with the town of Issoire promising to send 30 men-at-arms. In June, an English force under Sir Hugh Calveley appeared outside Issoire. The town closed its gates and prepared to defend itself, so the English threatened to burn the surrounding vines and cornfields, forcing Issoire to pay a year's *pâtis* of 300 florins. Despite this, the English still attacked, shooting more than 1,500 arrows into the town and trying to scale its walls. Although they were

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BATTLE OF FORMIGNY, 15 APRIL 1450

Despite the long series of English infantry victories, even during the late stages of the Hundred Years' War a controlled and disciplined charge by French heavy armoured cavalry could still be decisive under the right circumstances, as when an infantry force became disorganized.

A substantial army under Thomas Kyriel, sent to restore the crumbling English position in Normandy and reinforced by English garrison troops under Matthew Gough, made camp outside the village of Formigny. They had been shadowed by a smaller French force under the young Comte de Clermont, while a second small French force under the experienced Arthur de Richemont approached from the south. Kyriel and Gough knew about Clermont, but apparently thought that De Richemont was further away. The English therefore established a traditional defensive position facing Clermont's expected approach. When the latter appeared there was skirmishing, during which the English captured some French light guns.

Clermont was considering retreat when he learned that Arthur de Richemont had almost reached the battlefield. When Kyriel recognized De Richemont's sudden threat to his left flank, he ordered a complete redeployment of his line, which involved the English army pivoting around its right flank **(A left, A right)** to form a new front. At this point Clermont's French reacted, attacking the English as the latter fell back. De Richemont also sent a squadron of men-at-arms under Pierre de Brézé **(B)** to cut through the increasingly disorganized English left wing; these knights rode on to seize an English field fortification east of Formigny, and block the English retreat towards Bayeux. Panic ensued; the English army rapidly fell apart, a substantial part being slaughtered in and around the village of Formigny.

Inset 1: French light gun team.

Inset 2: Mid-15th century English archer and dismounted man-at-arms.

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Sallet helmet; German, 15th century. (Deutsches Historisches Museum, Berlin; author's photograph)

driven back and their scaling ladders were captured, Issoire no longer felt able to fulfil its obligation to the recently established local defence league. Instead the town's leaders asked the *baillé* of Auvergne to send troops on Issoire's behalf.

Although cannon had been an essentially urban military development, firearms would eventually undermine the primary military role of cities. In fact, the first time cannon proved really destructive during the Hundred Years' War was during a successful French siege of English-held Saint Saveur in 1374–5. Meanwhile traditional stone-throwing machines continued to be used, as when a large trebuchet was transported from La Réole to attack English-held Bergerac in 1377. The convoys of waggons required to carry such a weapon, like those that transported food and other vital military supplies, were frequently the target of enemy attack. Transport and supply had, of course, always been vital in siege warfare, but during this period they were the focus of several major clashes. During an English siege of Meaux, for example, a French relief column secretly tried to carry supplies over the wall, but a man climbing one of the ladders dropped a box of salted herrings. This made sufficient noise to rouse the English, who drove off the relief party.

Field fortifications

The campaign around Orléans in 1429 was a trial of strength which saw both sides committing ever greater forces. English tactics were to impose a blockade around the city by erecting *bastides* – semi-permanent field fortifications – defended with guns. The French attacked these positions in a counter-siege, and were sometimes able to get supplies into Orléans. These operations led to several engagements as each side tried to intercept the other's convoys, one of which was the battle of Rouvray, known to the English as the 'Battle of the Herrings'. On that occasion the English were forewarned and drew their wagons up as a field fortification, which the

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French attacked with insufficient numbers. This enabled the English to counter-attack, overwhelming the French and their Scottish allies, who had, contrary to their original plan, dismounted and were thus unable to escape.

On battlefields English infantry archers often cut one pointed stake per man in order to make a thicket of such stakes if the need arose. These stakes were set into the ground about a yard apart, in belts six or seven stakes deep and angled towards the enemy. Foot soldiers could then retreat into a thicket of stakes where a man on horseback would find it difficult to manoeuvre. By carefully erecting such thickets in certain positions, an enemy charge could also be diverted away from lightly armoured archers towards a waiting line of heavily armoured men-at-arms, usually on foot. It is even possible that the stakes might be obscured from approaching cavalry by dense ranks of men who stood in front of them, stepping back into their protection at the last moment. However, whether this ever really caused the front rank of an attacking densely-packed *conrois* cavalry formation to crash into the pointed stakes seems unlikely.

Long-established traditional forms of field fortifications continued to be used throughout the 14th century, and may have become even more important as guns came into greater use in open warfare. The Hungarians, for example, had used baggage wagons as a simple form of *wagenburg* against invading Mongols at the battle of Mohi earlier in the 13th century. Just over a hundred years later, in 1359, the Moldavians defeated an invading Polish army by trapping it in a dense forest, felling trees across the only feasible road ahead of and behind them. When the Venetian lagoon area was invaded by Genoese and Paduan forces in 1379 the Venetians built wooden forts and palisades, but then went further by barricading some of the canals with chained ships, blocking others with sunken barges, and harassing the enemy from small boats and galleys.

Effigial brass of an English knight, early 15th century. (*in situ* parish church, Dodford; author's photograph)

Firearms

The cost of the new gunpowder weapons was so high, and the weapons potentially so decisive, that governments were almost alone in being able to afford them. Naturally, they were also eager to retain control of cannon; this was clearly the case from an early date in England, where the Royal Household almost seems to have regarded firearms as precious objects. By around 1372 the English crown also had its own gunnery department in the Tower of London, as part of the Royal Wardrobe.

The role of cannon became more important during the 15th century, though their impact only became decisive in the latter half of that century. Such weapons continued to be more significant in siege warfare, and even there – because of their size, cumbersome carriages and slow rates of fire – they still proved more efficient in defence than in attack. In open battle field artillery could also be effective in ambushes, where, similarly, they could be carefully positioned and sighted.

Although field fortifications were already offering increasing scope for the use of cannon, 15th-century gunpowder artillery raised the cost of war rather than having any profound impact on tactics – that would come later. Guns were, however, increasingly accurate and reliable, and were clearly capable of

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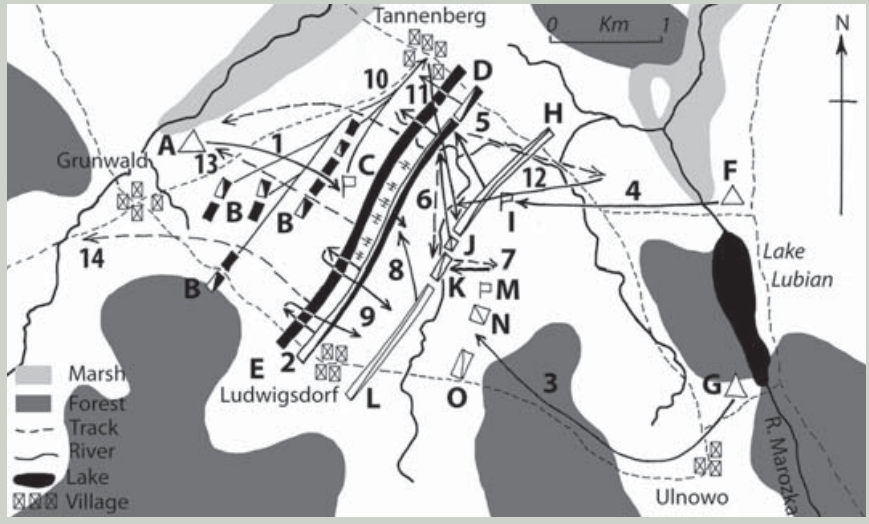
being aimed at very specific or even at moving targets. These ranged from enemy leaders in siege warfare, to enemy boats trying to run supplies into a besieged fortress, or even the masts of enemy ships at sea.

The making of guns, large and small, had also developed into a substantial industry involving many different craftsmen and their guilds. Only the richest manufacturers could afford to concentrate skilled men in one place, and the Bureau brothers' success in doing so may have been one reason why they made such a significant contribution to French victories during the last decades of the Hundred Years' War. They were also credited with a significantly larger-scale manufacture of iron cannonballs. A surviving document from 1442 records the efforts of one of these remarkable businessmen, Jean Bureau, when he made – or was responsible for the making of – a large number and variety of firearms for the French king's royal artillery train, at a cost of 4,198 *livres tournois*. These guns then required 20,000 pounds of gunpowder costing 2,200 *livres tournois*. Since just 3,100 *livres tournois* were added to the bill to cover 30,000 arrows, 1,000 spears, 1,000 bows, and 1,000 boxes (perhaps to store these latter weapons), the impact of firearms on the increasing cost of mid-15th century warfare becomes clear. King Charles VII of France clearly thought it worthwhile, however, since the Bureau brothers' artillery train contributed to his success in some 60 sieges in 1449–50 alone.

The battle of Tannenberg, fought on 15 July 1410 by a Teutonic Knights army against allied Lithuanian and Polish forces, was typical of many eastern European battles, involving widespread manoeuvres. It was also a clash of different tactical traditions. All three armies deployed along a long front. The Teutonic Knights initially arrayed cavalry ahead of infantry, but these were then pulled back, uncovering the Knights' previously hidden cannon. The entirely mounted Lithuanian army attacked the Knights' left wing, then fell back in apparent defeat, pursued by many Teutonic Knights and 'guest Crusaders'. Around the same time, the right wing of the Polish army attacked the centre of the Knights' line; the latter counter-attacked, then the Grand Master led his reserves to his northern flank and struck south. By then the Lithuanians had rallied, and they struck the flank of the Grand Master's thrust. The Teutonic Knights' line fragmented, the Grand Master was killed, and the Knights fled.

Initial dispositions:
Teutonic Knights' army
(A) Camp
(B) Widely dispersed reserves of cavalry & infantry
(C) Command position, Grand Master Ulrich von Jungingen
(D) 'Guest Crusaders'
(E) Cavalry initially ahead of infantry, with cannon between the lines
Army of Poland & Lithuania
(F) Lithuanian camp
(G) Polish camp
(H) Lithuanian cavalry
(I) Command position, Grand Duke Vytautas of Lithuania
(J) Troops of Smolensk
(K) Czechs
(L) Polish cavalry
(M) Command position, King Jagiello of Poland
(N) King Jagiello's bodyguard
(O) Polish reserve



Movements:
(1) Major part of Teutonic Knights' army deploys between Ludwigsdorf and Tannenberg;
(2) Teutonic Knights cavalry redeploys behind artillery & infantry; **(3)** Polish army deploys; **(4)** Lithuanian army deploys. **(5)** Vytautas leads Lithuanian charge but falls back, pursued by 'guest Crusaders' and some Knights; **(6)** Smolensk contingent falls back to join Poles; **(7)** Czechs fall back; **(8)** Poles attack Knights' centre; **(9)** Teutonic Knights attack Polish main force; **(10)** Grand Master leads Knights' reserves to support left flank; **(11)** Grand Master attacks southwards, towards Jagiello's command post; **(12)** Lithuanians regroup and attack flank of Knights who are attacking southwards; Knights fall back, Grand Master is killed. **(13)** Poles break through Teutonic Knights, many of whom are trapped in their camp; **(14)** Surviving Teutonic Knights flee the field, pursued by Poles and Lithuanians.

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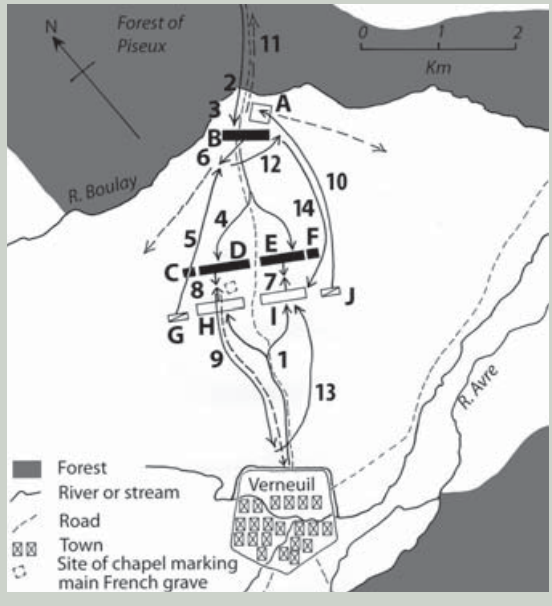
How far other technological improvements to cannon contributed is less clear. During their final siege of English-held Cherbourg, the French placed cannon on the tidal sands, and were able to protect them with waterproof covers so that they could open fire very soon after the tide went out. Nevertheless, the main obstacle to the development of field artillery remained the problem of attaching a heavy gun barrel to a mobile carriage. Several systems were tried before trunnions were sufficiently developed to be considered safe. (The first reference to such trunnions, which enabled a gun to be elevated or depressed easily, may have been at Lille in Burgundian Flanders in 1465.) During the 15th century the use of gunpowder nevertheless led to higher casualties, not least because bullet wounds were dirtier and involved the destruction of more tissue than those inflicted by earlier weapons, and so were more likely to become gangrenous.

Professional gunners had to master many skills, not least the setting up of large cannon which, until well into the 15th century, were normally carried in wagons but fired from positions embedded in earth and timber. The loading of a 14th or early 15th-century gun was a long and complicated business, partly because gas-tight tampons had to be hammered into the barrel to compensate for the poor fit of available cannonballs. In the earliest days up to three-fifths of the barrel of a smaller gun would supposedly be filled with powder, while the tampon near the muzzle enabled pressure to

The battle of Verneuil, 17 August 1424. Facing a major English effort to recapture recently retaken Verneuil, the French commanders grudgingly accepted their Scottish allies' demand to face the English in open battle. The French and Scots marched out of Verneuil under the Vicomte d'Aumâle, who nevertheless had only limited control over his forces. They took up position with dismounted French men-at-arms under the Vicomte de Narbonne to the left, supported by a small force of French cavalry; and similarly dismounted Scots under the Earls of Douglas and Buchan to the right, supported by a small unit of Lombard cavalry.
When the English under the Earl of Bedford emerged from the forest and crossed the stream, they saw the French array. Bedford formed his wagons into a field fortification, with horses tethered nose-to-tail outside as a further obstacle, and protected by a large body of archers. He arrayed his dismounted men-at-arms facing the enemy, with substantial units of archers on the flanks. The English stopped within arrow-range and the archers tried to drive sharpened stakes into the ground, but the dry ground was hard. Seizing this opportunity, the French cavalry broke through Bedford's archers and attacked the baggage train. Bedford then attacked the French men-at-arms; after bitter fighting several French commanders were killed and their men-at-arms broke and fled. Bedford pursued, but then returned to attack the Scots. Meanwhile, the Lombard cavalry swept around Salisbury's flank, breaking into the English baggage train and releasing many horses before being driven off by the English rearguard. The latter then also attacked the Scots and overwhelmed them, both Douglas and Buchan being killed.



Initial dispositions:
English army
(A) Baggage train
(B) Rearguard of archers
(C) Archers on right flank
(D) Dismounted men-at-arms under Bedford
(E) Dismounted men-at-arms under Salisbury
(F) Archers on left flank
French army
(G) French cavalry
(H) Dismounted men-at-arms under Narbonne
(I) Dismounted Scots under Douglas and Buchan
(J) Lombard cavalry

Movements:
(1) French advance from Verneuil; **(2)** English arrive from Damville; **(3)** Bedford arrays his force and forms baggage train into a field fortification; **(4)** English advance pauses while archers try with difficulty to drive defensive stakes into ground. **(5)** Sudden French cavalry charge breaks through archers and attacks baggage train; **(6)** English rearguard archers drive off cavalry attack. **(7)** Main forces advance against each other, but the Scots are slow and ragged; **(8)** English archers re-form and attack French men-at-arms; **(9)** After lengthy struggle, the French men-at-arms flee to Verneuil, pursued by Bedford. **(10)** Lombard cavalry break into English baggage train; **(11)** Many English flee; **(12)** English rearguard archers drive off Lombards. **(13)** Bedford returns from pursuit to attack Scots in rear; **(14)** Archers from rearguard attack Scots, who are surrounded and slaughtered.

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Detail from a mid-15th century Flemish tapestry of a siege scene, showing a two-man team firing a handgun. (Musée de la Château, Saumur; author's photograph)

build up so that ball and tampon burst out of the gun together. As the quality of gunpowder improved, and the use of iron rather than stone cannonballs provided for a better fit, the required quantity of power seems to have been greatly reduced (apart from reducing the cost, this probably also lessened casualties from the frequent bursting of gun barrels).

While crossbowmen remained vital, they would gradually be supplanted by hand-gunners – who were easier to train, and whose weapons were cheaper to produce and maintain. *Schiopettieri* or hand-gunners were certainly increasingly numerous among the fixed garrisons of 14th and early 15th-century Italy. By then similarly armed units were also included in many field armies, and by the close of the 15th century hand-gunners formed an essential element in almost all major European armies.

THE DAWN OF MODERN WARFARE

The second half of the 15th century

Overall, France regained its position as the most influential military power in Western Europe during the second half of the 15th century. In some aspects of strategic and tactical thinking Italy was probably more advanced, while Germany may have led in certain technical fields. Meanwhile, the Spanish kingdoms and England were militarily more inward-looking; Portugal was already looking beyond Europe, and Hungary was preoccupied with the Ottoman threat.

The development of infantry forces continued to be similar across much of Western and Central Europe. While it has been suggested that Italian foot

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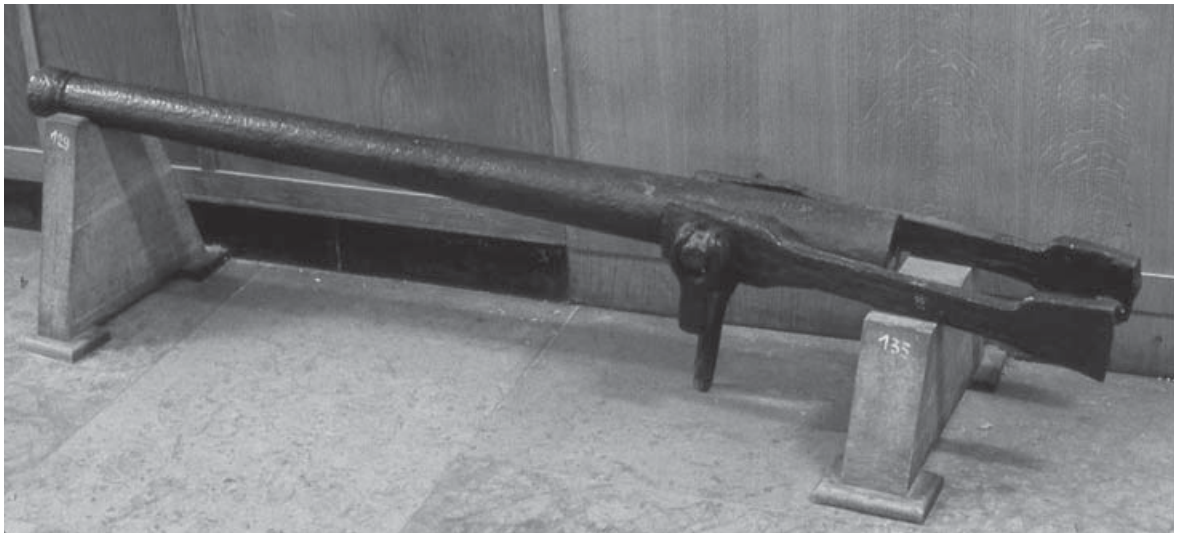
soldiers were more closely associated with elaborate field fortifications than was the case in France, this appears to be an over-simplification. Field fortifications had played a major role in France's final victories over the English in the Hundred Years' War, but thereafter French armies tended to operate more offensively. In Italy strategy and tactics may, in general terms, have been more defensive, and thus offered more scope for field fortifications.

Many Italian states already had small permanent infantry units known as *provisionati*, paid monthly and organized in a similar way to the full-time *lanze spezzate* heavy cavalry. In wartime larger numbers of foot soldiers were enlisted by contract, again rather like the *condottieri* cavalry, and these were backed up by local conscript or volunteer militias. There was clearly continuity in their command structures, with some senior officers forming a separate elite corps of infantry officers that was rarely seen elsewhere in Europe. On campaign, foot soldiers were organized under senior constables and operated almost as autonomous units. They included men using long or short spears according to circumstances, crossbowmen, archers supposedly based upon English bowmen, pikemen probably reflecting Swiss influence, old-fashioned bearers of large shields or mantlets to protect the crossbowmen, and light infantry assault troops distinguished by their smaller shields.

The organization of many late 15th-century armies was remarkably effective, though this was more characteristic of small, wealthy states such as Burgundy and Venice than of larger or poorer ones. The wealth of Venice enabled it to mobilize faster than its rivals, which clearly worried neighbouring states. While the Venetian army was probably the best in Italy, that of Milan consisted of a core of the Duke's own professional household cavalry plus conscript infantry. The Florentine army had long been neglected, while the forces of the Papal States had also recently declined. Similarly the army of Naples had an archaic organization, and although it was large it suffered from poor morale and a leadership undermined by civil war.

The Italians may have been aware of the latest technological changes in warfare north of the Alps, but they were behind the times when it came to military attitudes. The medieval concepts of 'Good War' characterized by restraint and honourable behaviour, and 'Bad War' typified by cruelty and



Small-bore, long-barrelled breech-loading gun, probably 15th-century German; note what appears to be a pintle for mounting it on a wall. (Military Museum, inv. 129/135, Budapest; author's photograph)

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inhumanity, remained stronger here than in Italy's European neighbours. This certainly influenced individual behaviour in battle. Much of the socio-military elite still saw the battlefield as a place to show individual courage and to win fame. For example, the writer Luigi da Porto maintained that it was better to take part in a fight involving hundreds rather than thousands, 'because in a small number everybody's prowess can be seen', while in a big battle individual merit tended to be obscured and so soldiers did not try so hard. War itself was still seen as an inevitable part of the 'cycle of history', which was itself a medieval concept. In fact there seems to have been increasing religious justification for war; the traditional cults of warrior saints like Sts George, Michael and others was now being joined by the cult of St Barbara – previously a minor saint, who became the patroness of gunners and gunpowder.

Meanwhile the intellectual and artistic elite took an increasing interest in the science of war, Leonardo da Vinci being only one of those who designed new military apparatus (both practical and impractical), while others worked on theories of ballistics. The 15th century saw an outpouring of military treatises comparable only to Rome as it tottered to its fall, Islam as it was menaced by the Mongols, and Europe in the declining years of the failed Crusading ideal. These were all times of crisis, but how much the political turbulence of the 15th century contributed to such military theorizing is unclear. It may simply

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BATTLE OF MORAT, 22 JUNE 1476

In this battle, massed Swiss infantry formations attacked in echelon. Combining a flank with a frontal attack, they overcame the superior artillery and cavalry of a Burgundian army that had become careless while waiting several days for a Swiss advance against their field fortifications.

As part of his campaign to regain lost territory in western Switzerland, Duke Charles the Bold of Burgundy besieged Murten (Morat) on the shore of the lake of the same name. His army of perhaps 23,000 men was attacked by the relieving army of the Swiss Confederation, strengthened to *c.*25,000 by allied troops under Duke René of Lorraine. Charles correctly expected to fight among hills and gorges east of the town, and at a position called the Grünhag he had a field fortification constructed consisting of a ditch, bank and palisade. Behind this his infantry **(A)** were flanked by crossbowmen and archers **(B**, **B)**. Charles's front was covered by his artillery, massed roughly at right-angles to his main line on the left flank **(C)**, while his cavalry was massed on the right **(D)**. Charles's intention was to draw the Swiss against his field fortification, bombard them from one flank, then crush them with heavy cavalry from the other.

After many false alarms since 15 April, the Burgundian army yet again stood ready throughout the morning of 22 June under heavy rain, but most then returned to camp for a midday meal, leaving their defences only lightly manned. At this point the Swiss Confederation army emerged from the Buggliwald woods to attack from east to west. The Swiss array consisted of *c.*1,800 mounted men-at-arms led by Duke René and the Duke of Thierstein **(E)**, with a pike and polearm block who veered to the right **(F)**, plus a relatively smaller number of crossbowmen, archers and hand-gunners – also carrying swords for hand-to-hand fighting – on the right flank **(G)**. Together, these Berne, Freiburg and Schwyz troops of the vanguard under Hans von Hallwyl totalled some 5,000 men. Advancing in echelon from behind these units, to deploy in the Swiss centre, came a huge wedge-shaped infantry formation **(H)** about 12,000 strong, largely consisting of pikemen and halberdiers fronted by ranks with two-handed swords; this was followed by a similar rearguard **(I)** numbering about 7,000 men.

The undermanned Burgundian artillery managed to fire one salvo, which is understood to have struck 'overenthusiastic Lorrainers'. The Burgundians manning the field fortifications resisted the massive pressure of the central pike-and-halberd block for some time, probably being reinforced as men hurried back to their positions from the camp **(J)**. The Swiss vanguard elements swung right to attack the Burgundian artillery, probably before the undermanned gunners could reload their weapons, and turned the Burgundian left flank. Having broken through, the Swiss infantry re-formed in smaller elements beyond the field fortification, and moved towards the Burgundian camp on a less concentrated front but with local superiority of numbers. The Burgundian camp hurriedly prepared for battle, and various units attacked advancing bodies of Swiss as and when they could; but each was pushed aside. The closely packed Swiss infantry seemed impervious to attacks by armoured cavalry – though these fought bravely in the rearguard. As the Swiss approached his camp from both north and south Duke Charles ordered his army to pull back, but the retreat became a rout and resistance collapsed.

Inset 1: Swiss pikemen push aside Burgundian mounted men-at-arms.

Inset 2: Burgundian field artillery crew.

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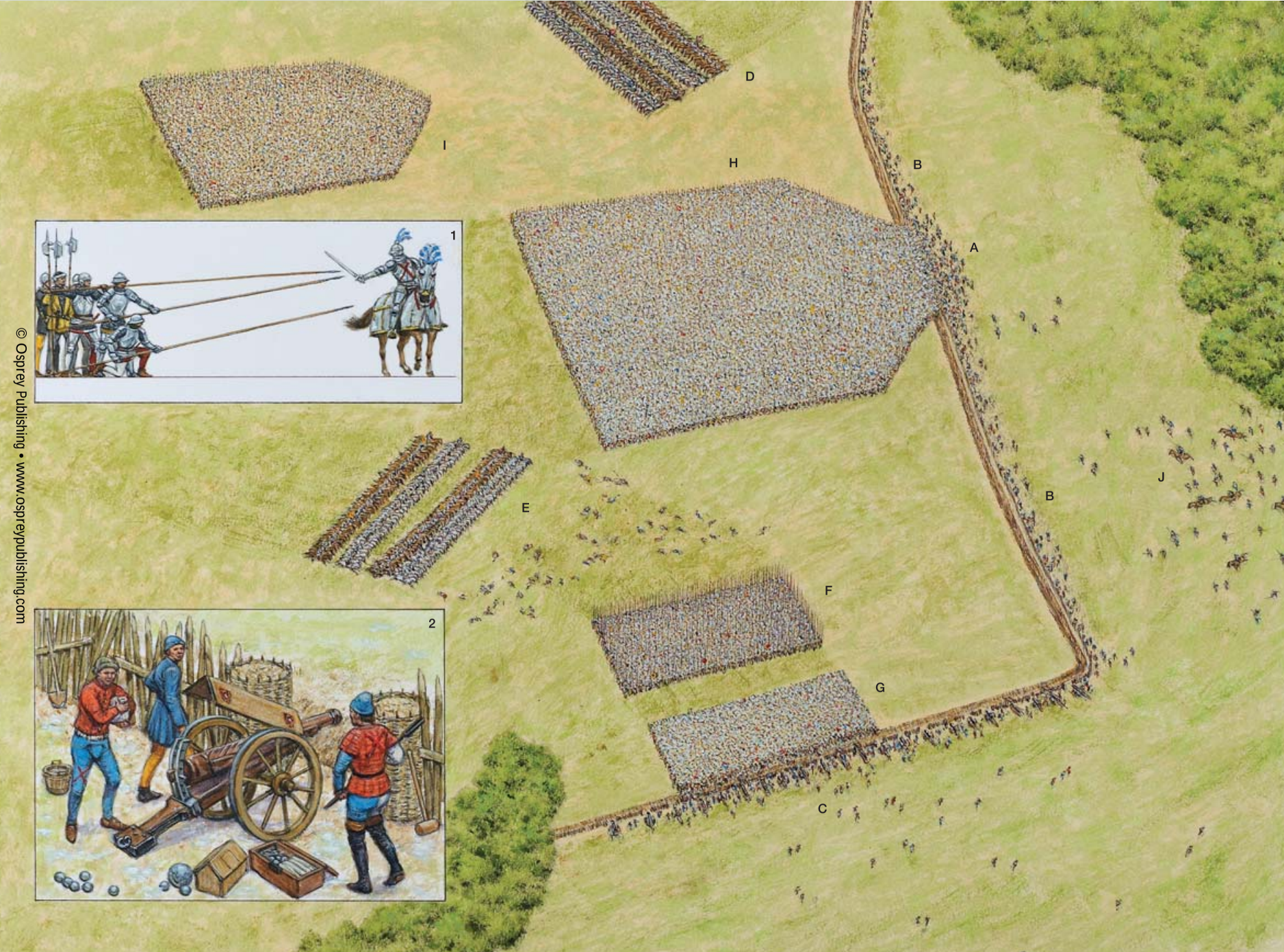

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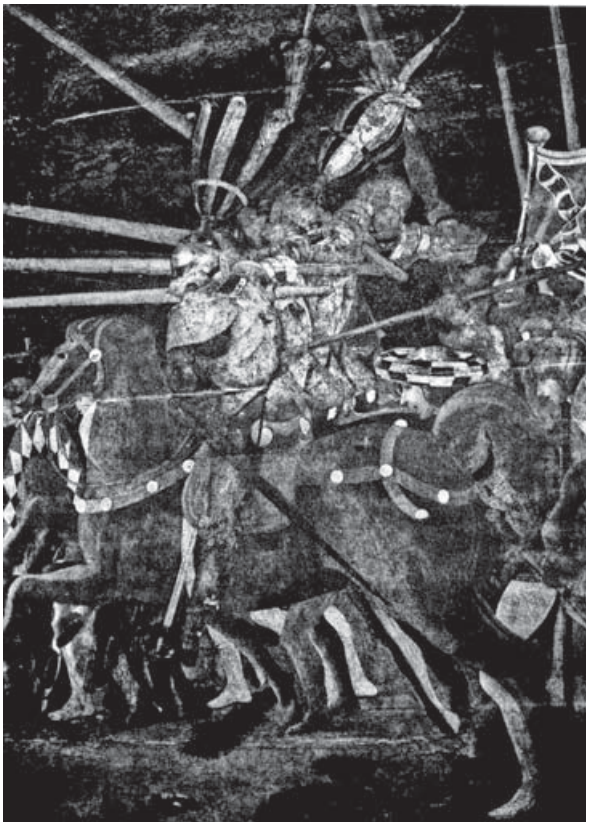

Fragment of a version of 'The Rout of San Romano' by Paolo Uccello. A large and important part of this work, in much better condition, can be seen in the National Gallery, London. (Musée du Louvre, Paris; author's photograph)

have been just another aspect of the Renaissance infatuation with the Classical past; while later-medieval professional soldiers might have been flattered by parallels between themselves and Caesar, it is highly unlikely that they actually imitated Roman tactics.

In France, for example, military writing tended to demonstrate a down-to-earth attitude, typified by 'gallows humour' about the brutal realities. Of the columns of smoke that marked both sieges and the passage of *chevauchées,* the French military writer Juvencal remarked that 'War without fire is like sausages without mustard.' In contrast, in Italy an unease about the increased savagery of 15th-century warfare led to a renewed focus on traditional concepts of 'good' and 'bad' war. Warfare was also made more hazardous by foreign troops such as Balkan *stradiotti* who were paid a ducat for every enemy head, and Frenchmen and Spaniards who often dispatched fallen foes with daggers.

Devastating an opponent's territory – the strategic attempt to undermine his economy by destroying his crops, mills, and other infrastructure – had long been normal practice. Yet a strategy aimed primarily at economic targets tended to result in prolonged wars of attrition with minor territorial gains. In many cases, a slow pace of warfare was also demanded by governments who were worried by the cost and risk of anything more ambitious.

Closer study of 15th-century warfare also shows that military leaders were fully aware of the potential of what would now be called mountain warfare, particularly along the Alpine frontiers of Italy. The use of natural obstacles – whether mountains, or lowland rivers, canals or marshes – was particularly highly developed by the Venetians. Their long-established defensive system called the *serraglio* ('cage' or 'harem') linked rivers, marshy areas and man-made fortifications. Elsewhere, smaller-scale tactics placed considerable reliance on field fortifications, artillery and infantry, in a tradition that grew out of the earlier importance of urban communal militia infantry and sophisticated defences. Such tactics naturally demanded the raising and organization of large forces of non-combatant pioneers or labourers.

The battle of Castillon in 1453 was in certain respects highly characteristic of the period. Here the French built a strong field fortification as an artillery park during their siege of English-held Castillon. Most of the estimated 300 guns in this position were probably light or even hand-guns. Following a night march, an Anglo-Gascon relieving army defeated a small force of French *francs archers* based in a nearby priory, but their assault on the fortified camp itself proved disastrous. Unable to break in, they were then struck in the flank by cavalry which descended from the neighbouring hills. In many ways this French victory was like Crécy in reverse, with the English choosing to attack a strong position defended, on this occasion, by firearms, crossbows and close-quarter weapons.

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Despite the growing importance and success of disciplined infantry, heavy armoured cavalry were still the most prestigious arm in late 15th-century western European warfare, though such troops were becoming extremely expensive to equip. In France the heavy cavalry lance would only be abandoned reluctantly during the 16th century. The sword had chivalric prestige, while a new form of substantial thrusting-and-cutting blade had largely replaced earlier types of sword. Partly as a result, the 15th century witnessed the publication of many elaborate fencing manuals.

The later decades of that century also saw French infantry tactics attempting to mirror those of the disciplined Swiss, who fought in close ranks called *Zileten*. Here a pikeman, a crossbowman and a hand-gunner fought as a team. In contrast, Italian accounts of the battle of Fornovo in 1495 described French infantry formations as consisting of a front rank of pikemen, then one armed with partizans or halberds, behind which was a line of swordsmen with small shields; finally there was a line of crossbowmen, and an elite in reserve armed with two-handed swords (supposedly as long as an Italian infantry spear).

Cavalry skill-at-arms

It had never been true that medieval fighting skills relied on brute force and ferocity. Skill with various weapons had been essential for 14th and 15th-century men-at-arms (though actual wrestling does sometimes seem to have been considered beneath their dignity). The knightly hero of Antoine de la Sale's *Le Petit Jehan de Saintré*, a chivalric tale of the period, was described

Saddle partially covered with ivory plates; southern Germany or Austria, *c.*1440. (Deutsches Historisches Museum, Berlin; author's photograph)

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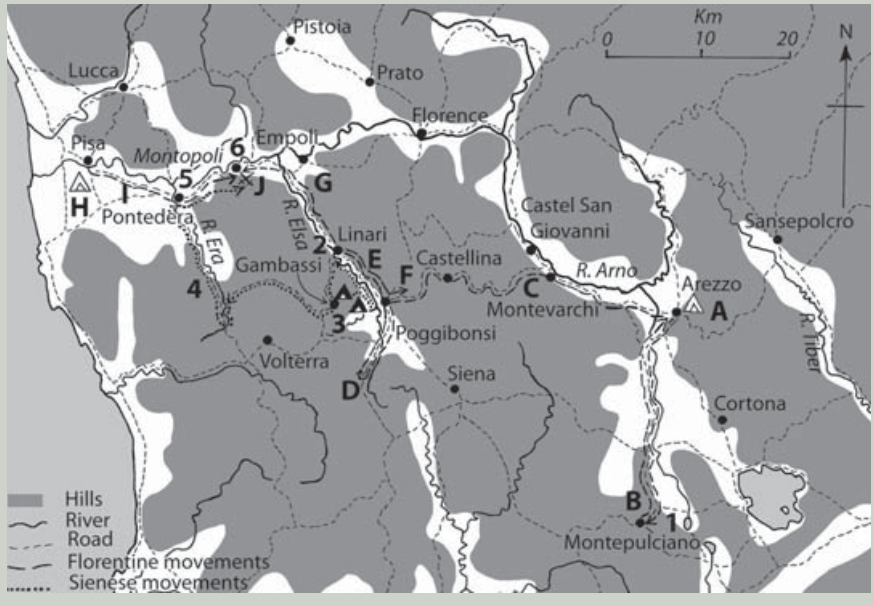
as being of slight build, lithe and light, but athletic, strong and agile even in full armour, with rapid reactions. He used weapons with great dexterity, while his riding skills enabled him to dodge and parry. Other 15th-century French sources describing combat on horseback would probably have applied throughout Western Europe. The best sword-strokes were the cut and reverse, though a knight should also be skilled with a downwards blow and a thrust. When on horseback his main target was his opponent's head. Control of the horse during the confusion of a mêlée was considered essential, so as not to tire the animal and to get the rider into a good position to attack.

The skills required of soldiers during the last phase of the Hundred Years' War clearly remained much as they had been, but Jean de Bueil added interesting details. He wrote that when fighting of foot it was best to use the lightest armour consistent with full protection. He also advised his reader – who was assumed to be a knightly man-at-arms – to pace himself, maintain his composure, and gain a psychological advantage by demonstrating confidence. Agility, speed and the use of feint and deception remained essential, but De Bueil also warned that it was easy to get out of breath if one's visor was closed.

Italian tactics

Compared with the new ideas being developed by or for Italian infantry, Italian heavy cavalry continued to use somewhat old-fashioned tactics.

Campaign of San Romano, May–June 1432. The 'Rout of San Romano', immortalized in paintings by Paolo Uccello, was a classic example of late medieval Italian *condottieri* manoeuvring warfare. Niccolò da Tolentino, the Florentine Captain-General, was encamped near Arezzo while Micheletto Attendolo commanded a second Florentine force near Pisa. The Sienese under Francesco Piccinino attacking the frontier fortress of Montepulciano and, supported by troops from allied Milan, raided regions south of the River Arno. Failing to ambush Piccinino on the night of 18 May, Tolentino brought supplies to besieged Montepulciano. Learning that the Sienese were also close to taking Linari and Gambassi, Tolentino collected munitions and reinforcements from Arezzo. Slowed by substantial numbers of infantry, he was still on the march when those towns fell. After further sieges and considerable marching by both sides, Tolentino and Attendolo attacked the Sienese outside San Romano on 2 June. Florentine sources claimed a great victory, while Sienese sources also claimed success because most of their army escaped the trap.



Florentine movements:
(A) Tolentino encamped outside allied Arezzo; **(B)** Tolentino raises siege of Montepulciano, 18–19 May; **(C)** Tolentino marches to save Linari and Gambassi, 24–26 May; **(D)** Tolentino marches up Elsa valley to cut expected Sienese withdrawal to Siena, 27–28 May; **(E)** Tolentino retakes Linari, 30 May; **(F)** Arezzo militia return home, 31 May; **(G)** Tolentino marches to Montopoli, 31 May–1 June; **(H)** Small Florentine army under Attendolo near Pisa; **(I)** Attendolo leads second Florentine army to Montopoli, 1–2 June; **(J)** Tolentino and Attendolo attack Sienese at San Romano, 2 June.
Sienese movements:
(1) Sienese under Piccinino besiege Montepulciano, May; **(2)** Sienese take Linari; **(3)** Sienese take Gambassi; **(4)** Sienese march to Pontedera, 27–28 May; **(5)** Sienese take Pontedera; (**6**) Sienese besiege Montopoli, 30 May–2 June.

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Battle of Loja, 1–7 July 1482. King Ferdinand of Aragon wanted to bolster his prestige at a time during the war against Granada when, for Castilians, he was merely the husband of their Queen Isabella. Ferdinand led his army across the Rio Frio and camped west of the Moorish town of Loja. The broken terrain obliged the Castilians to make several separated camps, while the irrigated valley was unsuitable for the Castilian heavy cavalry. A large detachment under the Marquis of Cadiz established an artillery position on the Heights of Albohacen. Before the Castilians could fortify this position, the Moorish garrison commander 'Ali al-'Attar sent a force of light cavalry across the river with orders to remain concealed. Next morning the Castilians on the summit were lured into attacking and pursuing a sortie by 'Ali al-'Attar, who retreated, drawing the Castilians further from their artillery; this was then overrun by the concealed Moorish cavalry. The Castilian cavalry turned to defend their guns; 'Ali al-'Attar pursued, but the Moors withdrew after Castilian reinforcements arrived. Having suffered significant losses, Ferdinand ordered his demoralized troops to withdraw across the Rio Frio; but as the men on the Heights of Albohacen fell back they were pressed so hard by the Moors that the rest of the Castilian army panicked. 'Ali al-'Attar exploited the situation to lead a general assault, which almost captured Ferdinand. A counter-charge by the rearguard slowed the Moors, who nevertheless harried the Castilians out of Granadan territory.

Initial dispositions:
Castilian army
(A) Main force under King Ferdinand
(B) Rearguard under Count of Tendilla
(C) Baggage train
(D) Artillery & defending force under Marquis of Cadiz and others
Granadan army
(E) Garrison under 'Ali al-'Attar
(F) Granadan ambush force

Castilian movements:
(1) Castilian army encamps in irrigated valley, 1 July; **(2)** Marquis of Cadiz occupies summit of Albohacen with cannon, 5 July; **(3)** Castilians on Albohacen attack sortie from Loja, but retreat to defend artillery; **(4)** Castilian reinforcements sent to help Cadiz. **(5)** Ferdinand decides to retreat and await reinforcements; **(6)** Troops on Albohacen start withdrawal at dawn, 7 July; **(7)** Seeing both Christian and Muslim banners on the hill, main army flees across Rio Frio; **(8)** Castilian cavalry charge slows Moorish attack; **(9)** Castilians retreat in moderately good order.
Granadan movements:
(10) 'Ali al-'Attar sends ambush force with orders to remain hidden, probably in woods east of Heights of Albohacen; **(11)** 'Ali al-'Attar leads an apparent sortie, retreats when attacked, and turns again to support Moorish ambush; **(12)** Ambush force attacks Castilian artillery; **(13)** Moors occupy Albohacen immediately defenders withdraw; **(14)** Seeing Castilians in disarray, 'Ali al-'Attar orders general attack; **(15)** Moors harry Castilian retreat.

These consisted of repeated controlled frontal charges by relatively small formations, squadron by squadron, operating from a base of field fortifications. According to Diomeda Carafa writing in 1478–99, each such charge was preceded by an advance guard of light cavalry skirmishers; then the best or most heavily armoured men-at-arms charged, and finally the remaining men-at-arms. The precise identification of each element is unclear, but perhaps the advance guard might be *stradiotti* or other true light cavalry, the 'best' men-at-arms being those with fully enclosed armet helmets, and 'the rest' being those with open sallet helmets and perhaps less horse-armour.

Italian field fortifications clearly did more than merely protect an army's baggage train or artillery, as they tended to do elsewhere. Rather they served as mobile military bases in wars of manoeuvre. Such tactics also led to the development of a new form of light assault infantry both to defend and attack field fortifications. The subsequent failure of light infantry against the dense and slow moving ranks of more heavily armed Swiss did not cause the military panic assumed by too many historians, yet it remained true that Italian and subsequently Spanish light infantry were not able to break their Swiss rivals' formations until they adopted hand-guns in much greater numbers at the very end of the 15th century. The Swiss phalanx was then doomed.

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Firearms

Training grounds or shooting butts for crossbowmen remained a feature of many cities, and soon seem to have been supplemented by ranges for the newly important hand-gunners. Though mounted crossbowmen were included in the French army in relatively small numbers, they played a more significant role in Italy. During the 15th century such troops, shooting from the saddle as well as operating as highly mobile mounted infantry, were also widespread in Hungary and Germany.

Similarly mounted hand-gunners rarely used their weapons from horseback but were becoming popular as bodyguards, particularly in the confined environments of the wealthier cities. There seem to be no references to shooting competitions with hand-guns in 15th-century France, despite the importance of such weapons in the last years of the Hundred Years' War. The earliest known hand-gun competitions were probably in Germany, at

'St George', wood carving by Tilman Riemenschneider, *c.*1490–95, Würzburg, showing the saint in knightly armour of late 15th-century 'Maximilian' style. (Bode Museum, inv. 414, Berlin; author's photograph)

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Panel painting from the *Tabula Magna* by Gabriel Angler, from the Benedictine Church at Tegernsee; German, *c.*1445–46. It shows an interesting rear view of a man wearing partial plate armour over mail. Note also the artist's treatment of the plate thigh defences. (Bode Museum, Berlin; author's photograph)

Nuremburg in 1429 and Augsburg in 1461. They were recorded in Switzerland around 1450, but Italy did not follow until the 1480s.

Nevertheless, French artillery is generally considered to have been the most advanced in late 15th-century Europe, in terms of organization and size if not necessarily the quality of its guns. Here the king's artillery consisted of five bands or trains based in different parts of the kingdom, each having an array of large and small cannon. Those who operated these artillery bands formed a separate and largely volunteer corps within the army, led by an elite apparently drawn from traditional families of expert gunners. Though these specialists might be very well paid, the wages of ordinary members of the artillery trains – those who did the 'heavy lifting' – were similar to those of other common soldiers. The mobility of French artillery particularly impressed their foes, and they made greater use of mobile field-guns that could be fired from their carriages. Like most other artillery trains, the French also used gun carriages as a form of field fortification and as a protection for their gunners. Small cannon were already mounted on two-wheeled carriages, the larger on four wheels – though the rear pair, often carrying the ammunition boxes, were detached when firing. This system was, in fact, already leading to the development of two-wheeled limbers attached to the trail in a manner that survived until modern times.

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Schiopettieri hand-gunners had been known in Italy for over a hundred years, but had largely been used as garrison troops. By the time of the French invasion at the end of the 15th century such troops were used in open warfare in substantial numbers, reportedly making battlefields smoky for the first time in history. Despite – or perhaps because of – growing competion from guns, the crossbow evolved into an astonishingly powerful weapon, combining great power with light weight. But the use of steel and very sophisticated composite bow-staves had made the crossbow clumsy and slow to load, and its increasing complexity made technical problems more likely.

EXTERNAL CHALLENGES

Warfare on the frontiers of Western Christendom

By the later Middle Ages the indigenous peoples of the eastern shores of the Baltic Sea were largely dominated by Scandinavian or German rulers, usually in the guise of Crusaders. Nevertheless, in many such areas Balt tribes continued to serve as local militias, those of Livonia providing frontier auxiliaries to the German Crusader Orders. Further north, Estonian and Finnish tribes similarly served in the armies of the Danish and Swedish rulers. Meanwhile the Lithuanians – pagan until the mid-14th century – continued to resist the Northern Crusades, and to carve out a huge empire at the expense of their Russian neighbours.

Campaigns in this area largely consisted of rapid *reysa* raids during which the importance of river communications led to the building of a series of small

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BOABDIL CAPTURED AT THE RIO GENIL, 20 APRIL 1483

This incident late in the Spanish *Reconquista* typifies the mobility of Spanish mixed forces of knightly cavalry, light cavalry and light infantry after many generations of campaigning in broken country.

Muhammad Abu Abdullah XI, known in Spanish as Boabdil, was one of three rulers currently struggling for control of the Amirate of Granada. To enhance his prestige, Boabdil raided the Castilian frontier town of Lucena. As the Muslims crossed the frontier, beacons sent warnings to the Count of Cabra who was responsible for defending this region. However, the raiders were already preparing to return towards Loja when their location was identified by a small Spanish force. The Granadan infantry were resting while five battalions of horsemen kept guard. By the time the Spaniards appeared, the Muslim cavalry had reformed into two groups to cover the infantry, booty and prisoners as they set out towards the Rio Genil valley and Loca. Though they saw the Spaniards ahead of them, the enemy's numbers were obscured by morning mist and the forests which covered the Sierra de la Horconera in this steep, confined terrain, so Boabdil decided upon a fighting retreat.

The Spaniards divided their forces, the infantry partially obscured in a wooded area while the cavalry attacked from the opposite side of a minor valley. This gave the impression of a larger force and the Granadans continued to retreat, covered by their own relatively small numbers of cavalry. A ford across the river lay virtually on the frontier between Castile and Granada, but Boabdil's army found the river swollen by rain or melting snow. The Moorish cavalry **(A**, **A)** halted to protect the flanks of the infantry **(B)** and the booty **(C**, **C)** as it made the difficult crossing, and Boabdil's guardsmen **(D)** were placed among trees along the bank.

The Spanish *jinete* light cavalry **(E)** swung around the Moorish right flank to cut them off from the ford, while the Spanish infantry **(F**, **F)** attacked the blocking force. The Spanish heavy cavalry **(G)** now came up. The Granadans who got across the Genil hurried on towards Loja, whereupon some of the Spanish heavy cavalry joined the attack on Boabdil's guard. The latter dismounted to make a stand amongst thickets and reeds along the water's edge, where Boabdil eventually found himself isolated and under attack by Spanish infantry. Though wounded, he refused to surrender to 'common men' and fought on, only handing over his sword when a Spanish nobleman named Don Diego Fernández de Córdoba rode up.

(The Amir was later released on accepting the suzerainty of the 'Catholic Monarchs', but his brother and nephew prolonged the war. Granada finally fell to a besieging Spanish army on 2 January 1492.)

Inset: Spanish light infantryman and Granadan cavalryman.

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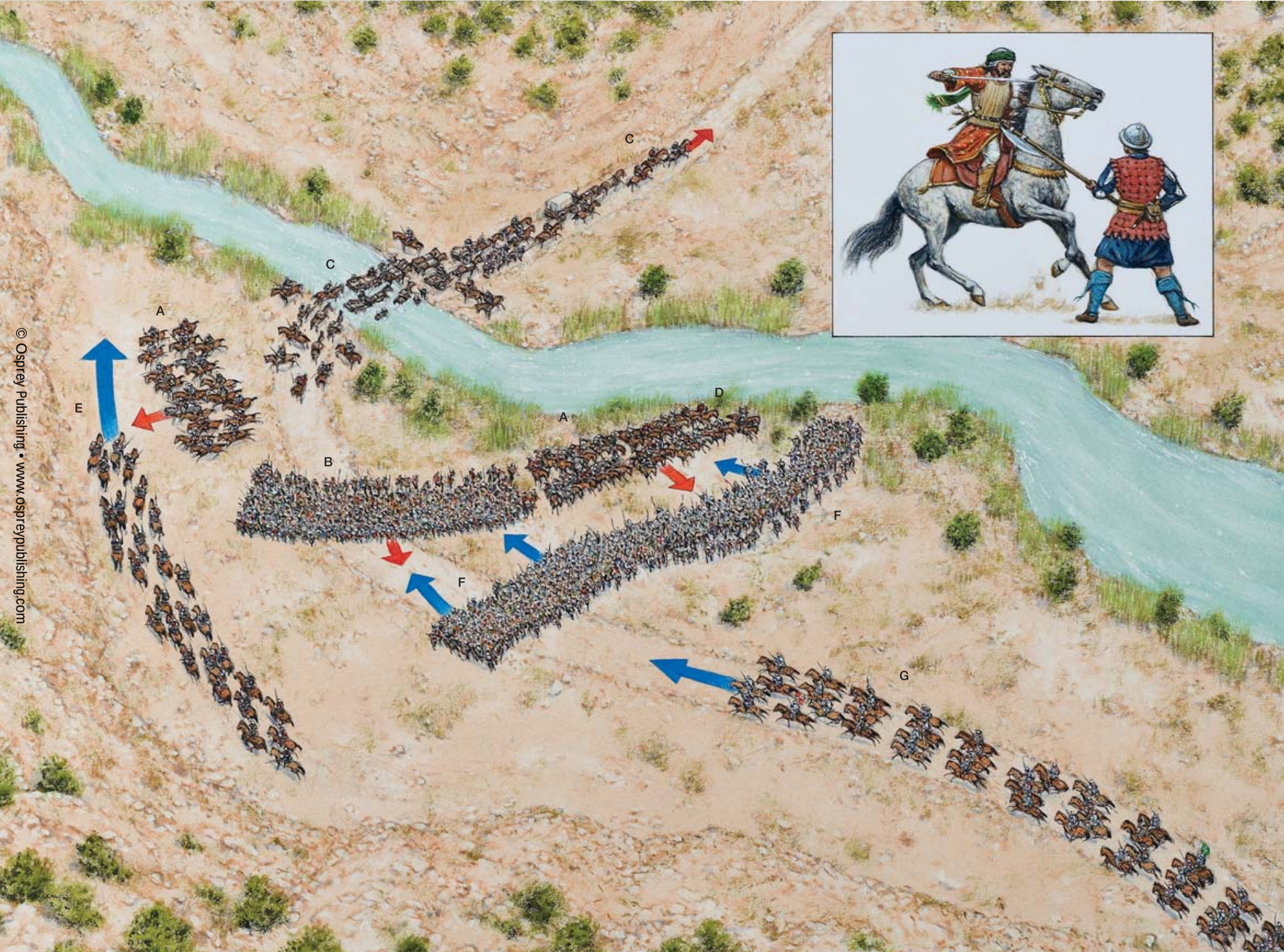

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Detail of a panel painting attributed to Tiziano Vecellio, showing a halberdier in partial plate armour; Venetian, *c.*1500. (Fogg Museum. inv. 2007.106, Cambridge Massachusetts; author's photograph)

fortifications along such waterways. While the Westerners' armoured cavalry often preferred winter raiding, when the frozen ground was more suitable for their horses, the Lithuanians' light cavalry seem to have preferred summer, when the swampy forests hampered their foes. However, in both Crusader-ruled Prussia and Lithuania light cavalry persisted, for both economic and military or cultural reasons. These local indigenous horsemen fought in a manner that reflected an Eastern influence, perhaps reinforced by the recent successes of Mongol invaders in neighbouring Russia.

Hungary

The later medieval Kingdom of Hungary was also on the frontier of Western European civilization, and its armies campaigned in many areas with varying success. Early in the 14th century the Hungarian army was reorganized into regional *bandiera* forces, one following the king and the others controlled by barons known as *voivodes, bans* or *ispans*. This system was refined in the mid-14th century as a result of campaigning in Italy; innovations included an adoption of heavier arms and armour by light cavalry, who were occasionally of distant steppe origin.

Militarily as important as those ex-nomadic peoples were varied militia forces, many of them drawn from Saxon German settlers in the new towns of Transylvania. Although the later medieval Hungarian army was largely Western European in character, it still included light cavalry recruited from the animal-raising (though no longer nomadic) peoples of the Great Hungarian Plain, the northern Balkans and what is now Romania. These horsemen tended to be used as fast-moving and, for their Western neighbours, intimidating raiders.

The great Hungarian commander Janos Hunyadi (c.1387–1456) came from a culturally mixed Transylvanian background. Though newly arrived Hussite refugees from Bohemia provided him with some of his most effective troops, his heavy cavalry largely consisted of German mercenaries, while his light cavalry came from Hungary itself. According to a 15th-century French observer, these latter used 'small bows of horn and tendons and crossbows with which they shoot, and they have good horses and are less armoured and light and do not descend happily to fight on foot'.

A true professional, Hunyadi was prepared to adopt new weapons and new tactics in his wars against the Ottomans and the Empire in the 1430s–50s. Firearms became increasingly important, particularly when mounted on wagons drawn up in a *waggenberg* field fortification; this was probably a traditional Magyar or nomad idea updated with Hussite firepower. Another favourite Hunyadi tactic was to draw the Ottoman cavalry forward against such field fortifications, and then attack them in the flank with his own cavalry – a method particularly suited to the narrow defiles of Transylvania and Serbia.

The appearance of mounted crossbowmen in the 15th-century Hungarian army may have shown Italian military influence, but by the time the Ottomans invaded the heartlands of Hungary local light cavalry had clearly

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adopted – or perhaps more accurately, re-adopted – many Turco-Mongol military styles. For their part the Ottomans were similarly learning from the Hungarians, particularly where firearms and the *waggenberg* were concerned.

Hunyadi's son, King Matthias Corvinus (r.1458–90), built upon his father's military experience to recruit a standing force from essentially the same sources; this became known as the 'Black Army' because of its darkened iron armour. Numbering around 30,000 well-paid troops, skilled in winter warfare, Matthias' 'Black Army' fought against Poland, Bohemia, in Austria and against the Ottomans. However, both Matthias' son and grandson were weak rulers, and by the start of the 16th century the Hungarian military structure was in decay. The minor aristocracy seems to have lost interest in military affairs, the towns were defended only by small mercenary units, and after a peasant uprising was ruthlessly crushed even the old *jobbagy* peasant militia could no longer be relied upon. In 1526 the Hungarian army was crushed by the Ottomans at the decisive battle of Mohacs.

Late 15th-century Italian-style knightly armour, with armet closed helmet, from the Sanctuary of Madonna delle Grazie in Mantua. (Museo Diocesano Francesco Gonzaga, armour no. 3, Mantua)

Spain

The other main frontier between late medieval Western European and Islamic civilizations was in Andalusia, where the Amirate of Granada, the last remnant of Muslim al-Andalus, faced Castile and Aragon, the two biggest Christian kingdoms of what would later become Spain. The Castilian provinces in Andalusia now served as the main arsenal, granary and base for the Christians' drive to complete the *Reconquista*. Meanwhile, however, Aragon largely turned its attentions elsewhere, campaigning as far afield as southern Italy and Greece.

By the later 15th century artillery formed an elite in Spanish armies, with gunners recruited in France, Germany, Italy and the other Iberian kingdoms. Some of the great guns had a handling crew of 200 men (though only a handful were fully trained gunners). The old aristocratic cavalry remained the most prestigious part of the army, and delighted in various forms of tournament. Nevertheless, these also included distinctively Andalusian *jinete* light cavalry games called *Juegos de Canas,* using light spears or javelins. Training also included a form of mounted bullfight. *Mudejars* – Muslims living under Christian rule – played significant non-combat roles, and some Spanish noblemen employed Moorish drummers and flute-players. However, most of the Moors who fought for Castile and Aragon were temporary 'allies' – usually refugees from the quarrels of Granada's political factions.

On campaign, the organization of Spanish armies was fluid and mixed. Castilian forces were divided into *batalla* for tactical purposes, perhaps reflecting the units of 50 men under a captain described in the mid-15th century romance *Tirant lo Blanc*. Heavy cavalry mustered in *lanzas-hombre de armas,* each consisting of one man-at-arms, his more lightly armoured

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squire, a page, a servant and two mounted crossbowmen; but this unit was administrative rather than tactical, and in battle the knight seems to have fought alone or with just his squire in support. The *lanzas a la jinete* consisted of squadrons of light cavalry.

The strategy and tactics used by late 15th-century Spanish armies still owed a great deal to medieval Iberian traditions, which in turn reflected close contacts with the Islamic world. Siege warfare was paramount. Raiding economic targets such as crops, orchards and mills was considered the best way to undermine the enemy's ability to resist, while a field army needed plenty of crossbowmen to resist enemy cavalry. Strong defensive positions were also essential on the march, because the Moors were more mobile and adept at sudden ambushes. More recently, however, normal Western European tactical ideas had taken hold. Consequently a *batalla* or 'battle' often consisted of ten *cuadrillas* or squadrons each of around 50 men and led by a *cuadrillero*. Ideally, five *batallas* were considered a division, though in reality such divisions had no standard size or structure.

During the final war for Granada a traditional strategy of raiding and ravaging continued, though this was dominated by the need to use relatively few passes through the rugged mountains. In such warfare both sides employed sophisticated early-warning systems, with hilltop observation towers and beacons to give the inhabitants time to move themselves and their livestock out of harm's way. The troops engaged in such warfare fought in relatively open order, with both foot and horse skirmishing, ambushing, and moving remarkably quickly across rugged terrain. Armoured cavalry had, however, been decisive in the great battles of the *Reconquista;* the armies of northern Castile still thought in this way, and senior commanders had great faith in the impact of heavily armoured horsemen on enemy morale. Nevertheless, the war for Granada showed that such troops rarely hit their intended targets, and consequently light cavalry *a la jinete* increased in numbers.

The Iberian peninsula was one of several parts of 15th-century Europe famous for their infantry. Tactically, those from Spain had much in common with contemporary Italian foot soldiers, emphasizing the offensive use of light infantry operating out of strong field fortifications in close co-operation with cavalry. Their own confidence against enemy horsemen is summed up in an early 16th-century Spanish saying: *'Muerto el caballo, perdito el hombre d'armas'* – 'When the horse is dead, the man-at-arms is lost'. Spanish armies placed great emphasis on field fortifications, particularly when facing a highly manoeuvrable Moorish foe. The Spanish were also skilled at using field fortifications to secure a bridgehead following a naval landing, and had perfected this by the time the *Conquistadores* invaded the Americas.

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OSPREY
PUBLISHING

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First published in Great Britain in 2012 by Osprey Publishing,
Midland House, West Way, Botley, Oxford, OX2 0PH, UK
44-02 23rd Street, Suite 219, Long Island City, NY 11101, USA

E-mail: info@ospreypublishing.com

OSPREY PUBLISHING IS PART OF THE OSPREY GROUP

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A CIP catalogue record for this book is available from the British Library

Print ISBN: 978 1 84908 739 1
PDF ebook ISBN: 978 1 84908 740 7
ePub ebook ISBN: 978 1 78096 884 1

Editor: Martin Windrow
Page layout by Ken Vail Graphic Design, Cambridge, UK (kvgd.com)
Index by Alison Worthington
Typeset in Sabon and Myriad Pro
Battle maps by author
Originated by PDQ Media, Bungay, UK
Printed in China through Worldprint Ltd.

12 13 14 15 16 9 8 7 6 5 4 3 2 1

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For Bish and Sue Majumdar

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